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Encyclopædia Britannica:

OR, A

DICTIONARY

OF

ARTS, SCIENCES, AND MISCELLANEOUS

LITERATURE;

ENLARGED AND IMPROVED.

THE FOURTH EDITION.

Illustrated with nearly six hundred Engravings.

VOL. II.

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ENCYCLOPÆDIA BRITANNICA.

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America.

AMERICA (from *Americus Veſputius*, falſely ſaid to be the firſt diſcoverer of the continent); one of the four quarters of the world, probably the largeſt of the whole, and from its late diſcovery frequently denominated the *New World*.

1 Boundaries.

This vaſt country extends from the 80th degree of north, to the 56th degree of ſouth latitude; and, where its breadth is known, from the 35th to the 136th degree weſt longitude from London; ſtretching between 8000 and 9000 miles in length, and in its greateſt breadth 3690. It ſees both hemiſpheres, has two ſummers and a double winter, and enjoys all the variety of climates which the earth affords. It is waſhed by the two great oceans. To the eaſtward it has the Atlantic, which divides it from Europe and Africa; to the weſt it has the Pacific or Great South ſea, by which it is ſeparated from Aſia. By theſe ſeas it may, and does, carry on a direct commerce with the other three parts of the world.

2 North and South continent.

America is not of equal breadth throughout its whole extent; but is divided into two great continents, called *North* and *South America*, by an iſthmus 1500 miles long, and which at Darien, about Lat. 9° N. is only 60 miles over. This iſthmus forms with the northern and ſouthern continents, a vaſt gulf, in which lie a great number of iſlands, called the *Weſt Indies*, in contradiſtinction to the eaſtern parts of Aſia, which are called the *Eaſt Indies*.

3 Remarkable prevalence of cold.

Between the New World and the Old, there are ſeveral very ſtriking differences; but the moſt remarkable is the general predominance of cold throughout the whole extent of America. Though we cannot, in any country, determine the preciſe degree of heat merely by the diſtance of the equator, becauſe the elevation above the ſea, the nature of the ſoil, &c. affect the climate; yet, in the ancient continent, the heat is much more in proportion to the vicinity to the equator than in any part of America. Here the rigour of the frigid zone extends over half that which ſhould be temperate by its poſition. Even in thoſe latitudes where the winter is ſcarcely felt on the old continent, it reigns with great ſeverity in America, though during a ſhort period. Nor does this cold, prevalent in the new world, confine itſelf to the temperate zones; but extends its influence to the torrid zone alſo, conſiderably mitigating the exceſs of its heat. Along the eaſtern coaſt, the climate, though more ſimilar to that of the torrid zone in other parts of the earth, is nevertheleſs conſiderably milder than in thoſe countries of Aſia and Africa which lie in the ſame latitude. From the ſouthern tropic to the extremity of the America continent, the cold is ſaid to be much greater than in parallel northern latitudes even of America itſelf.

America.

For this ſo remarkable difference between the climate of the new continent and the old, various cauſes have been aſſigned by different authors. The following is the opinion of the learned Dr Robertſon on this ſubject. "Though the utmoſt extent of America towards the north be not yet diſcovered, we know that it advances nearer to the pole than either Europe or Aſia. The latter have large ſeas to the north, which are open during part of the year; and, even when covered with ice, the wind that blows over them is leſs intenſely cold than that which blows over land in the ſame latitude. But, in America, the land ſtretches from the river St Lawrence towards the pole, and ſpreads out immenſely to the weſt. A chain of enormous mountains, covered with ſnow and ice, runs through all this dreary region. The wind paſſing over ſuch an extent of high and frozen land, becomes ſo impregnated with cold, that it acquires a piercing keenneſs, which it retains in its progreſs through warmer climates; and is not entirely mitigated until it reach the gulf of Mexico. Over all the continent of North America, a north-weſterly wind and exceſſive cold are ſynonymous terms. Even in the moſt ſultry weather, the moment that the wind veers to that quarter, its penetrating influence is felt in a tranſition from heat to cold no leſs violent than ſudden. To this powerful cauſe we may aſcribe the extraordinary dominion of cold, and its violent inroads into the ſouthern provinces in that part of the globe.

4 Dr Robertſon's reaſons for this ſuperior degree of cold. *Hiſtory of America*, vol. i. p. 252.

"Other cauſes, no leſs remarkable, diminiſh the active power of heat in thoſe parts of the American continent which lie between the tropics. In all that portion of the globe, the wind blows in an invariable direction from eaſt to weſt. As this wind holds its courſe acroſs the ancient continent, it arrives at the countries which ſtretch along the weſtern ſhore of Africa, inflamed with all the fiery particles which it hath collected from the ſultry plains of Aſia, and the burning ſands in the African deſerts. The coaſt of Africa is accordingly

America. ingly the region of the earth which feels the moſt fervent heat, and is expoſed to the unmitigated ardour of the torrid zone. But this ſame wind, which brings ſuch an acceſſion of warmth to the countries lying between the river of Senegal and Caffraria, traverſes the Atlantic ocean before it reaches the American ſhore. It is cooled in its paſſage over this vaſt body of water; and is felt as a refreſhing gale along the coaſts of Braſil and Guiana, rendering thoſe countries, though amongſt the warmeſt in America, temperate, when compared with thoſe which lie oppoſite to them in Africa. As this wind advances in its courſe acroſs America, it meets with immenſe plains covered with impenetrable foreſts; or occupied by large rivers, marſhes, and ſtagnating waters, where it can recover no conſiderable degree of heat. At length it arrives at the Andes, which run from north to ſouth through the whole continent. In paſſing over their elevated and frozen ſummits, it is ſo thoroughly cooled, that the greater part of the countries beyond them hardly feel the ardour to which they ſeem expoſed by their ſituation. In the other provinces of America, from Terra Firma weſtward to the Mexican empire, the heat of the climate is tempered, in ſome places, by the elevation of the land above the ſea; in others, by their extraordinary humidity; and in all, by the enormous mountains ſcattered over this tract. The iſlands of America in the torrid zone are either ſmall or mountainous, and are fanned alternately by refreſhing ſea and land breezes.

"The cauſes of the extraordinary cold towards the ſouthern limits of America, and in the ſeas beyond it, cannot be aſcertained in a manner equally ſatisfying. It was long ſuppoſed, that a vaſt continent, diſtinguiſhed by the name of *Terra Auſtralis Incognita*, lay between the ſouthern extremity of America and the antarctic pole. The ſame principles which account for the extraordinary degree of cold in the northern regions of America, were employed in order to explain that which is felt at Cape Horn and the adjacent countries. The immenſe extent of the ſouthern continent, and the rivers which it poured into the ocean, were mentioned and admitted by philoſophers as cauſes ſufficient to occaſion the unuſual ſenſation of cold, and the ſtill more uncommon appearances of frozen ſeas in that region of the globe. But the imaginary continent to which ſuch influence was aſcribed having been ſearched for in vain, and the ſpace which it was ſuppoſed to occupy having been found to be an open ſea, new conjectures muſt be formed with reſpect to the cauſes of a temperature of climate, ſo extremely different from that which we experience in countries removed at the ſame diſtance from the oppoſite pole.

Ibid. p. 451. "The moſt obvious and probable cauſe of this ſuperior degree of cold towards the ſouthern extremity of America, ſeems to be the form of the continent there. Its breadth gradually decreaſes as it ſtretches from St Antonio ſouthwards; and from the bay of St Julian to the ſtraits of Magellan its dimenſions are much contracted. On the eaſt and weſt ſides, it is waſhed by the Atlantic and Pacific oceans. From its ſouthern part, it is probable that an open ſea ſtretches to the antarctic pole. In whichever of theſe directions the wind blows, it is cooled before it approaches the Magellanic regions, by paſſing over a vaſt body of water, nor is the land there of ſuch extent, that it can recover any conſiderable degree of heat in its progreſs over it. Theſe circumſtances concur in rendering the temperature of the air in this diſtrict of America more ſimilar to that of an inſular, than to that of a continental climate; and hinder it from acquiring the ſame degree of ſummer heat with places in Europe and Aſia, in a correſponding northern latitude. The north wind is the only one that reaches this part of America, after blowing over a great continent. But, from an attentive ſurvey of its poſition, this will be found to have a tendency rather to diminiſh than augment the degree of heat. The ſouthern extremity of America is properly the termination of the immenſe ridge of the Andes, which ſtretches nearly in a direct line from north to ſouth, through the whole extent of the continent. The moſt ſultry regions in South America, Guiana, Braſil, Paraguay, and Tucuman, lie many degrees to the eaſt of the Magellanic regions. The level country of Peru, which enjoys the tropical heats, is ſituated conſiderably to the weſt of them. The north wind, then, though it blows over land, does not bring to the ſouthern extremity of America an increaſe of heat collected in its paſſage over torrid regions; but, before it arrives there, it muſt have ſwept along the ſummits of the Andes, and become impregnated with the cold of that frozen region."

5 Extreme moiſture of the American climate.

Another particularity in the climate of America, is its exceſſive moiſture in general. In ſome places, indeed, on the weſtern coaſt, rain is not known; but, in all other parts, the moiſtneſs of the climate is as remarkable as the cold. The foreſts wherewith it is everywhere covered, no doubt, partly occaſion the moiſture of its climate; but the moſt prevalent cauſe is the vaſt quantity of water in the Atlantic and Pacific oceans, with which America is environed on all ſides. Hence thoſe places where the continent is narroweſt are deluged with almoſt perpetual rains, accompanied with violent thunder and lightning, by which ſome of them, particularly Porto Bello, are rendered in a manner uninhabitable.

6 Large rivers, and exceſſive luxuriance of vegetation.

This extreme moiſture of the American climate is productive of much larger rivers there than in any other part of the world. The Danube, the Nile, the Indus, or the Ganges, are not comparable to the Miſſiſſippi, the river St Lawrence, or that of the Amazons; nor are ſuch large lakes to be found anywhere as thoſe which North America affords. To the ſame cauſe we are alſo partly to aſcribe the exceſſive luxuriance of all kinds of vegetables in almoſt all parts of this country. In the ſouthern provinces, where the moiſture of the climate is aided by the warmth of the ſun, the woods are almoſt impervious, and the ſurface of the ground is hid from the eye, under a thick covering of ſhrubs, herbs, and ſeeds. In the northern provinces, the foreſts are not encumbered with the ſame luxuriance of vegetation; nevertheleſs, they afford trees much larger of their kind than what are to be found anywhere elſe.

7 Malignity of climate unjuſtly aſcribed to America.

From the coldneſs and the moiſture of America, an extreme malignity of climate has been inferred, and aſſerted by M. de Paw, in his *Recherches Philoſophiques*. Hence, according to his hypotheſis, the ſmallneſs and irregularity of the nobler animals, and the ſize and enormous multiplication of reptiles and inſects.

But the ſuppoſed ſmallneſs and leſs ferocity of the American

America. *History of Mexico*, vol. ii. p. 285.

American animals, the abbé Clavigero obſerves, inſtead of the malignity, demonſtrate the mildneſs and bounty of the clime, if we give credit to Buffon, at whoſe fountain M. de Paw has drank, and of whoſe teſtimony he has availed himſelf againſt Don Pernetty: Buffon, who in many places of his Natural Hiſtory produces the ſmallneſs of the American animals as a certain argument of the malignity of the climate of America, in treating afterwards of ſavage animals, in tom. ii. ſpeaks thus: "As all things, even the moſt free creatures, are ſubject to natural laws, and animals as well as men are ſubjected to the influence of climate and ſoil, it appears that the ſame cauſes which have civilized and poliſhed the human ſpecies in our climates, may have likewiſe produced ſimilar effects upon other ſpecies. The wolf, which is perhaps the fierceſt of all the quadrupeds of the temperate zone, is, however, incomparably leſs terrible than the tiger, the lion, and the panther, of the torrid zone, and the white bear and hyena of the frigid zone. In America, where the air and the earth are more mild than thoſe of Africa, the tiger, the lion, and the panther, are not terrible but in the name. They have degenerated, if fierceneſs, joined to cruelty, made their nature; or, to ſpeak more properly, they have only ſuffered the influence of the climate; under a milder ſky, their nature alſo has become more mild. From climes which are immoderate in their temperature, are obtained drugs, perfumes, poiſons, and all thoſe plants whoſe qualities are ſtrong. The temperate earth, on the contrary, produces only things which are temperate; the mildeſt herbs, the moſt wholeſome pulſe, the ſweeteſt fruits, the moſt quiet animals, and the moſt humane men, are the natives of this happy clime. As the earth makes the plants, the earth and plants make animals; the earth, the plants, and the animals, make man. The phyſical qualities of man, and the animals which feed on other animals, depend, though more remotely, on the ſame cauſes which influence their diſpoſitions and cuſtoms. This is the greateſt proof and demonſtration, that in temperate climes every thing becomes temperate, and that in intemperate climes every thing is exceſſive; and that ſize and form, which appear fixed and determinate qualities, depend, notwithſtanding, like the relative qualities, on the influence of climate. The ſize of our quadrupeds cannot be compared with that of the elephant, the rhinoceros, or ſea-horſe. The largeſt of our birds are but ſmall, if compared with the oſtrich, the condore, and *caſoare*." So far M. Buffon, whoſe text we have copied, becauſe it is contrary to what M. de Paw writes againſt the climate of America, and to Buffon himſelf in many other places.

If the large and fierce animals are natives of intemperate climes, and ſmall and tranquil animals of temperate climes, as M. Buffon has here eſtabliſhed; if mildneſs of climate influences the diſpoſition and cuſtoms of animals, M. de Paw does not well deduce the malignity of the climate of America from the ſmaller ſize and leſs fierceneſs of its animals; he ought rather to have deduced the gentleneſs and ſweetneſs of its climate from this antecedent. If, on the contrary, the ſmaller ſize and leſs fierceneſs of the American animals, with reſpect to thoſe of the old continent, are a proof of their degeneracy, ariſing from the malignity of the clime, as M. de Paw would have it, we ought in like manner to argue the malignity of the climate of Europe from the ſmaller ſize and leſs fierceneſs of its animals, compared with thoſe of Africa. If a philoſopher of the country of Guinea ſhould undertake a work in imitation of M. de Paw, with this title, *Recherches Philoſophiques ſur les Européens*, he might avail himſelf of the ſame argument which M. de Paw uſes, to demonſtrate the malignity of the climate of Europe, and the advantages of that of Africa. The climate of Europe, he would ſay, is very unfavourable to the production of quadrupeds, which are found incomparably ſmaller and more cowardly than ours. What are the horſe and the ox, the largeſt of its animals, compared with our elephants, our rhinoceroſes, our ſea-horſes, and our camels? What are its lizards, either in ſize or intrepidity, compared with our crocodiles? its wolves, its bears, the moſt dreadful of its wild beaſts, when beſide our lions and tigers? Its eagles, its vultures, and cranes, if compared with our oſtriches, appear only like hens.

America. 3 America not more infeſted than other countries with inſects and noxious animals.

As to the enormous ſize and prodigious multiplication of the inſects and other little noxious animals, "The ſurface of the earth (ſays M. de Paw), infected by putrefaction, was overrun with lizards, ſerpents, reptiles, and inſects, monſtrous for ſize, and the activity of their poiſon, which they drew from the copious juices of this uncultivated ſoil, that was corrupted and abandoned to itſelf, where the nutritive juice became ſharp, like the milk in the bread of animals which do not exerciſe the virtue of propagation. Caterpillars, crabs, butterflies, beetles, ſpiders, frogs, and toads, were, for the moſt part, of an enormous corpulence in the ſpecies, and multiplied beyond what can be imagined. Panama is infeſted with ſerpents, Carthagena with clouds of enormous bats, Porto Bello with toads, Surinam with *kakerlacas*, or *cucarachas*, Guadaloupe, and the other colonies of the iſlands, with beetles, Quito with niguas or chegoes, and Lima with lice and bugs. The ancient kings of Mexico, and the emperors of Peru, found no other means of ridding their ſubjects of thoſe inſects which fed upon them, than the impoſition of an annual tribute of a certain quantity of lice. Ferdinand Cortes found bags full of them in the palace of Montezuma." But this argument, exaggerated as it is, proves nothing againſt the climate of America in general, much leſs againſt that of Mexico. There being ſome lands in America, in which, on account of their heat, humidity, or want of inhabitants, large inſects are found, and exceſſively multiplied, will prove at moſt, that in ſome places the ſurface of the earth is infected, as he ſays, with putrefaction; but not that the ſoil of Mexico, or that of all America, is ſtinking, uncultivated, vitiated, and abandoned to itſelf. If ſuch a deduction were juſt, M. de Paw might alſo ſay, that the ſoil of the old continent is barren and ſunks; as in many countries of it there are prodigious multitudes of monſtrous inſects, noxious reptiles, and vile animals, as in the Philippine iſles, in many of thoſe of the Indian archipelago, in ſeveral countries of the ſouth of Aſia, in many of Africa, and even in ſome of Europe. The Philippine iſles are infeſted with enormous ants and monſtrous butterflies, Japan with ſcorpions, the ſouth of Aſia and Africa with ſerpents, Egypt with aſps, Guinea and Ethiopia with armies of rats, Holland with field rats, Ukrania with toads,

America. as M. de Paw himſelf affirms; in Italy, the Campagna di Roma (although peopled for ſo many ages) with vipers, Calabria with tarantulas, the ſhores of the Adriatic ſea with clouds of gnats; and even in France, the population of which is ſo great and ſo ancient, whoſe lands are ſo well cultivated, and whoſe climate is ſo celebrated by the French, there appeared, a few years ago, according to M. Buffon, a new ſpecies of field mice, larger than the common kind, called by him *surmolots*, which have multiplied exceedingly, to the great damage of the fields. M. Bazin, in his Compendium of the Hiſtory of Inſects, numbers 77 ſpecies of bugs which are all found in Paris and its neighbourhood. That large capital, as M. Bomare ſays, ſwarms with thoſe diſguſtful inſects. It is true, that there are places in America, where the multitudes of inſects and filthy vermine make life irkſome; but we do not know that they have arrived to ſuch exceſs of multiplication as to depopulate any place; at leaſt there cannot be ſo many examples produced of this cauſe of depopulation in the new as in the old continent, which are atteſted by Theophraſtus, Varro, Pliny, and other authors. The frogs depopulated one place in Gaul, and the locuſts another in Africa. One of the Cyclades was depopulated by mice; Amiclas, near to Taracina, by ſerpents; another place, near to Ethiopia, by ſcorpions and poiſonous ants; and another by ſcolopendras: and not ſo diſtant from our own times, the Mauritius was going to have been abandoned on account of the extraordinary multiplication of rats, as we can remember to have read in a French author.

With reſpect to the ſize of the inſects, reptiles, and ſuch animals, M. de Paw makes uſe of the teſtimony of M. Dumont, who, in his Memoirs on Louiſiana, ſays, that the frogs are ſo large there that they weigh 37 French pounds, and their horrid croaking imitates the bellowing of cows. But M. de Paw himſelf ſays (in his anſwer to Don Pernetty, cap. 17.), that all thoſe who have written about Louiſiana, from Henepin, Le Clerc, and Cav. Tonti, to Dumont, have contradicted each other, ſometimes on one and ſometimes on another ſubject. In fact, neither in the old or the new continent are there frogs of 37 pounds in weight; but there are in Aſia and Africa, ſerpents, butterflies, ants, and other animals, of ſuch monſtrous ſize, that they exceed all thoſe which have been diſcovered in the new world. We know very well, that ſome American hiſtorians ſay, that a certain gigantic ſpecies of ſerpents is to be found in the woods, which attract men with their breath, and ſwallow them up; but we know alſo, that ſeveral hiſtorians both ancient and modern, report the ſame thing of the ſerpents of Aſia, and even ſomething more. Megaſthenes, cited by Pliny, ſaid, that there were ſerpents found in Aſia, ſo large, that they ſwallowed entire ſtags and bulls. Metrodorus, cited by the ſame author, affirms, that in Aſia there were ſerpents which, by their breath, attracted birds, however high they were, or quick their flight. Among the moderns, Gemelli, in vol. v. of his Tour of the World, when he treats of the animals of the Philippine iſles, ſpeaks thus: "There are ſerpents in theſe iſlands of immodcrate ſize: there is one called *ibitin*, very long, which ſuſpending itſelf by the tail from the trunk of a tree, waits till ſtags, bears, and alſo men paſs by, in order to attract them with its breath, and devour them at once, entirely:" from whence it is evident, that this very ancient fable has been common to both continents. America.

Further, it may be aſked, In what country of America could M. de Paw find ants to equal thoſe of the Philippine iſlands, called *fulum*, reſpecting which Hernandez affirms, that there were ſix fingers breadth in length and one in breadth? Who has ever ſeen in America butterflies ſo large as thoſe of Bourbon, Ternate, the Philippine iſles, and all the Indian archipelago? The largeſt bat of America (native of hot ſhady countries), which is that called by Buffon *vampire*, is, according to him, of the ſize of a pigeon. *La rougette*, one of the ſpecies of Aſia, is as large as a raven; and the *rouſette*, another ſpecies of Aſia, is as big as a large hen. Its wings, when extended, meaſure from tip to tip three Pariſian feet, and according to Gemelli, who meaſured it in the Philippine iſles, ſix palms. M. Buffon acknowledges the exceſs in ſize of the Aſiatic bat over the American ſpecies, but denies it as to number. Gemelli ſays, that thoſe of the iſland of Luzon were ſo numerous that they darkened the air, and that the noiſe which they made with their teeth, in eating the fruits of the woods, was heard at the diſtance of two miles. M. de Paw ſays, in talking of ſerpents, "It cannot be affirmed that the new world has ſhown any ſerpents larger than thoſe which Mr Adanſon ſaw in the deſerts of Africa." The greateſt ſerpent found in Mexico, after a diligent ſearch made by Hernandez, was 18 feet long; but this is not to be compared with that of the Moluccas, which Bomare ſays is 33 feet in length: nor with the *anacondaja* of Ceylon, which the ſame author ſays is more than 33 feet long; nor with others of Aſia and Africa mentioned by the ſame author. Laſtly, The argument drawn from the multitude and ſize of the American inſects is fully as weighty as the argument drawn from the ſmallneſs and ſcarcity of quadrupeds, and both detect the ſame ignorance, or rather the ſame voluntary and ſtudied forgetfulneſs, of the things of the old continent.

With reſpect to what M. de Paw has ſaid of the tribute of lice in Mexico, in that as well as in many other things he diſcovers his ridiculous credulity. It is true that Cortes found bags of lice in the magazines of the palace of King Axajacatil. It is alſo true, that Montezuma impoſed ſuch a tribute, not on all his ſubjects, however, but only on thoſe who were beggars; not on account of the extraordinary multitude of thoſe inſects, as M. de Paw affirms, but becauſe Montezuma, who could not ſuffer idleneſs in his ſubjects, reſolved that that miſerable ſet of people, who could not labour, ſhould at leaſt be occupied in louſing themſelves. This was the true reaſon of ſuch an extravagant tribute, as Torquemada, Betancourt, and other hiſtorians relate; and nobody ever before thought of that which M. de Paw affirms, merely becauſe it ſuited his prepoſterous ſyſtem. Thoſe diſguſting inſects poſſibly abound as much in the hair and clothes of American beggars as of any poor and uncleanly low people in the world; but there is not a doubt, that if any ſovereign of Europe was to exact ſuch a tribute from the poor in his dominions, not only bags, but great veſſels, might be filled with them.

At the time America was diſcovered, it was found inhabited

America. inhabited by a race of men no less different from those in the other parts of the world, than the climate and natural productions of this continent are different from those of Europe, Asia, or Africa. One great peculiarity in the native Americans is their colour, and the identity of it throughout the whole extent of the continent. In Europe and Asia, the people who inhabit the northern countries are of a fairer complexion than those who dwell more to the southward. In the torrid zone, both in Africa and Asia, the natives are entirely black, or the next thing to it. This, however, must be understood with some limitation. The people of Lapland, who inhabit the most northerly part of Europe, are by no means so fair as the inhabitants of Britain; nor are the Tartars so fair as the inhabitants of Europe who lie under the same parallels of latitude. Nevertheless, a Laplander is fair when compared with an Abyssinian, and a Tartar, if compared with a native of the Molucca islands. In America, this distinction of colour was not to be found. In the torrid zone there were no negroes, and in the temperate and frigid zones there were no white people. All of them were of a kind of red copper colour, which Mr Forster observed, in the Pesserays of Terra del Fuego, to have something of a gloss resembling that metal. It doth not appear, however, that this matter hath ever been inquired into with sufficient accuracy. The inhabitants of the inland parts of South America, where the continent is widest, and consequently the influence of the sun the most powerful, have never been compared with those of Canada, or more northerly parts, at least by any person of credit. Yet this ought to have been done, and that in many instances too, before it could be asserted so positively as most authors do, that there is not the least difference of complexion among the natives of America. Indeed, so many systems have been formed concerning them, that it is very difficult to obtain a true knowledge of the most simple facts. If we may believe the Abbé Raynal, the Californians are swarthier than the Mexicans; and so positive is he in his opinion, that he gives a reason for it. "This difference of colour," says he, "proves, that the civilized life of society subverts, or totally changes, the order and laws of nature, since we find, under the temperate zone, a savage people that are blacker than the civilized nations of the torrid zone." —On the other hand, Dr Robertson classes all the inhabitants of Spanish America together with regard to colour, whether they are civilized or uncivilized; and when he speaks of California, takes no notice of any peculiarity in their colour more than others. The general appearance of the indigenous Americans in various districts is thus described by the Chevalier Pinto: "They are all of a copper colour, with some diversity of shade, not in proportion to their distance from the equator, but according to the degree of elevation of the territory in which they reside. Those who live in a high country are fairer than those in the marshy low lands on the coast. Their face is round; farther removed, perhaps, than that of any people from an oval shape. Their forehead is small; the extremity of their ears far from the face; their lips thick; their nose flat; their eyes black, or of a chesnut colour, small, but capable of discerning objects at a great distance. Their hair is always thick and sleek, and without any tendency to curl. At the first aspect, a South American

9 General description of the natives.

appears to be mild and innocent: but, on a more attentive view, one discovers in his countenance something wild, distrustful, and sullen." America.

10 Don Ulloa's account.

The following account of the native Americans is given by Don Antonio Ulloa, in a work entitled *Memoires Philosophiques, Historiques, et Physiques, concernant la decouverte de l'Amerique*, lately published.

The American Indians are naturally of a colour bordering upon red. Their frequent exposure to the sun and wind changes it to their ordinary dusky hue. The temperature of the air appears to have little or no influence in this respect. There is no perceptible difference in complexion between the inhabitants of the high and those of the low parts of Peru; yet the climates are of extreme difference. Nay, the Indians who live as far as 40 degrees and upwards south or north of the equator, are not to be distinguished, in point of colour, from those immediately under it.

There is also a general conformation of features and person, which more or less characterizes them all. Their chief distinctions, in these respects, are a small forehead, partly covered with hair to the eyebrows, little eyes; the nose thin, pointed, and bent towards the upper lip; a broad face; large ears; black, thick, and lank hair; the legs well formed, the feet small, the body thick and muscular; little or no beard on the face, and that little never extending beyond a small part of the chin and upper lip. It may easily be supposed that this general description cannot apply, in all its parts, to every individual; but all of them partake so much of it, that they may be easily distinguished even from the mulattoes, who come nearest to them in point of colour.

The resemblance among all the American tribes is not less remarkable in respect to their genius, character, manners, and particular customs. The most distant tribes are, in these respects, as similar as though they formed but one nation.

All the Indian nations have a peculiar pleasure in painting their bodies of a red colour, with a certain species of earth. The mine of Guançavelica was formerly of no other use than to supply them with this material for dyeing their bodies; and the cinnabar extracted from it was applied entirely to this purpose. The tribes in Louisiana and Canada have the same passion; hence minium is the commodity most in demand there.

It may seem singular that these nations, whose natural colour is red, should affect the same colour as an artificial ornament. But it may be observed, that they do nothing in this respect but what corresponds to the practice of Europeans, who also study to heighten and display to advantage the natural red and white of their complexions. The Indians of Peru have now indeed abandoned the custom of painting their bodies: but it was common among them before they were conquered by the Spaniards; and it still remains the custom of all those tribes who have preserved their liberty. The northern nations of America, besides the red colour which is predominant, employ also black, white, blue, and green, in painting their bodies.

11 Peculiarities in regard to ornament and dress.

The adjustment of these colours is a matter of as great consideration with the Indians of Louisiana and the vast regions extending to the north, as the ornaments of dress among the most polished nations. The business

America. buſineſs itſelf they call *mactacher*, and they do not fail to apply all their talents and aſſiduity to accompliſh it in the moſt finiſhed manner. No lady of the greateſt faſhion ever conſulted her mirror with more anxiety, than the Indians do while painting their bodies. The colours are applied with the utmoſt accuracy and addreſs. Upon the eyelids, preciſely at the root of the eyelaſhes, they draw two lines as fine as the ſmalleſt thread; the ſame upon the lips, the openings of the noſtrils, the eyebrows, and the ears; of which laſt they even follow all the inflexions and ſinuoſities. As to the reſt of the face, they diſtribute various figures, in all which the red predominates, and the other colours are aſſorted ſo as to throw it out to the beſt advantage. The neck alſo receives its proper ornament; a thick coat of vermilion commonly diſtinguiſhes the cheeks. Five or ſix hours are requiſite for accompliſhing all this with the nicety which they affect. As their firſt attempts do not always ſucceed to their wiſh, they efface them, and begin anew upon a better plan. No coquette is more faſtidious in her choice of ornament, none more vain when the important adjuſtment is finiſhed. Their delight and ſelf-ſatisfaction are then ſo great, that the mirror is hardly ever laid down. An Indian *mactached* to his mind is the vaineſt of all the human ſpecies. The other parts of the body are left in their natural ſtate, and, excepting what is called a *cachecul*, they go entirely naked.

Such of them as have made themſelves eminent for bravery, or other qualifications, are diſtinguiſhed by figures painted on their bodies. They introduce the colours by making punctures on their ſkin, and the extent of ſurface which this ornament covers is proportioned to the exploits they have performed. Some paint only their arms, others both their arms and legs, others again their thighs; while thoſe who have attained the ſummit of warlike renown, have their bodies painted from the waiſt upwards. This is the heraldry of the Indians; the devices of which are probably more exactly adjuſted to the merits of the perſons who bear them than thoſe of more civilized countries.

Beſides theſe ornaments, the warriors alſo carry plumes of feathers on their heads, their arms, and ancles. Theſe likewiſe are tokens of valour, and none but ſuch as have been thus diſtinguiſhed may wear them.

The propenſity to indolence is equal among all the tribes of Indians, civilized or ſavage. The only employment of thoſe who have preſerved their independence is hunting and fiſhing. In ſome diſtricts the women exerciſe a little agriculture in raiſing Indian corn and pompions, of which they form a ſpecies of aliment by bruiſing them together: they alſo prepare the ordinary beverage in uſe among them, taking care, at the ſame time, of the children, of whom the fathers take no charge.

The female Indians of all the conquered regions of South America practiſe what is called the *urcu* (a word which among them ſignifies *elevation*). It conſiſts in throwing forward the hair from the crown of the head upon the brow, and cutting it round from the ears to above the eye; ſo that the forehead and eyebrows are entirely covered. The ſame cuſtom takes place in the northern countries. The female inhabitants of both regions tie the reſt of their hair behind, ſo exactly in the ſame faſhion, that it might be ſuppoſed the effect of mutual imitation. This, however, being impoſſible, from the vaſt diſtance that ſeparates them, is thought to countenance the ſuppoſition of the whole of America being originally planted with one race of people. America.

This cuſtom does not take place among the males. Thoſe of the higher parts of Peru wear long and flowing hair, which they reckon a great ornament. In the lower parts of the ſame country they cut it ſhort, on account of the heat of the climate; a circumſtance in which they imitate the Spaniards. The inhabitants of Louiſiana pluck out their hair by the roots from the crown of the head forwards, in order to obtain a large forehead, otherwiſe denied them by nature. The reſt of their hair they cut as ſhort as poſſible, to prevent their enemies from ſeizing them by it in battle, and alſo to prevent them from eaſily getting their ſcalp, ſhould they fall into their hands as priſoners.

12 Remarkable inſenſibility to pain,

The whole race of American Indians is diſtinguiſhed by thickneſs of ſkin and hardneſs of fibres: circumſtances which probably contribute to that inſenſibility to bodily pain for which they are remarkable. An inſtance of this inſenſibility occurred in an Indian who was under the neceſſity of ſubmitting to be cut for the ſtone. This operation, in ordinary caſes, ſeldom laſts above four or five minutes. Unfavourable circumſtances in his caſe prolonged it to the uncommon period of 27 minutes. Yet all this time the patient gave no tokens of the extreme pain commonly attending this operation: he complained only as a perſon does who feels ſome ſlight uneaſineſs. At laſt the ſtone was extracted. Two days after, he expreſſed a deſire for food, and on the eighth day from the operation, he quitted his bed, free from pain, although the wound was not yet thoroughly cloſed. The ſame want of ſenſibility is obſerved in caſes of fractures, wounds, and other accidents of a ſimilar nature. In all theſe caſes their cure is eaſily effected, and they ſeem to ſuffer leſs preſent pain than any other race of men. The ſkulls that have been taken up in their ancient burying-grounds are of a greater thickneſs than that bone is commonly found, being from ſix to ſeven lines from the outer to the inner ſuperficies. The ſame is remarked as to the thickneſs of their ſkins.

It is natural to infer from hence, that their comparative inſenſibility to pain is owing to a coarſer and ſtronger organization than that of other nations. The eaſe with which they endure the ſeverities of climate is another proof of this. The inhabitants of the higher parts of Peru live amidſt perpetual froſt and ſnow. Although their clothing is very ſlight, they ſupport this inclement temperature without the leaſt inconvenience. Habit, it is to be confeſſed, may contribute a good deal to this, but much alſo is to be aſcribed to the compact texture of their ſkin, which defends them from the impreſſion of cold through their pores.

13 and to the inclemencies of weather.

The northern Indians reſemble them in this reſpect. The utmoſt rigours of the winter ſeaſon do not prevent them from following the chaſe almoſt naked. It is true, they wear a kind of woollen cloak, or ſometimes the ſkin of a wild beaſt, upon their ſhoulders; but beſides that it covers only a ſmall part of their body, it would appear that they uſe it rather for ornament than warmth. In fact, they wear it indiſcriminately, in the ſeverities of winter and in the moſt ſultry heats of ſummer,

America. summer, when neither Europeans nor Negroes can suffer any but the slightest clothing. They even frequently throw aside this cloak when they go a hunting, that it may not embarrass them in traversing their forests, where they say the thorns and undergrowth would take hold of it; while, on the contrary, they slide smoothly over the surface of their naked bodies. At all times they go with their heads uncovered, without suffering the least inconvenience, either from the cold, or from those *coups de soleil*, which in Louisiana are so often fatal to the inhabitants of other climates.

The Indians of South America distinguish themselves by modern dresses, in which they affect various tastes. Those of the high country, and of the valleys in Peru, dress partly in the Spanish fashion. Instead of hats they wear bonnets of coarse double cloth, the weight of which neither seems to incommode them when they go to warmer climates, nor does the accidental want of them seem to be felt in situations where the most piercing cold reigns. Their legs and feet are always bare, if we except a sort of sandals made of the skins of oxen. The inhabitants of South America, compared with those of North America, are described as generally more feeble in their frame, less vigorous in the efforts of their mind, of gentler dispositions, more addicted to pleasure, and sunk in indolence.—This, however, is not universally the case. Many of their nations are as intrepid and enterprising as any others on the whole continent. Among the tribes on the banks of the Oroonoko, if a warrior aspires to the post of captain, his probation begins with a long fast, more rigid than any ever observed by the most abstemious hermit. At the close of this the chiefs assemble: and each gives him three lashes with a large whip, applied so vigorously, that his body is almost flayed. If he betrays the least symptom of impatience, or even of sensibility, he is disgraced for ever, and rejected as unworthy of the honour. After some interval, his constancy is proved by a more excruciating trial. He is laid in his hammock with his hands bound fast; and an innumerable multitude of venomous ants, whose bite occasions a violent pain and inflammation, are thrown upon him. The judges of his merit stand around the hammock; and whilst these cruel insects fasten upon the most sensible parts of his body, a sigh, a groan, or an involuntary motion expressive of what he suffers, would exclude him from the dignity of which he is ambitious. Even after this evidence, his fortitude is not deemed to be sufficiently ascertained, till he has stood another test more severe, if possible, than the former. He is again suspended in his hammock, and covered with the leaves of the palmetto. A fire of stinking herbs is kindled underneath, so as he may feel its heat, and be involved in smoke. Though scorched and almost suffocated, he must continue to endure this with the same patient insensibility. Many perish in this essay of their firmness and courage; but such as go through it with applause, receive the ensigns of their new dignity with much solemnity, and are ever after regarded as leaders of approved resolution, whose behaviour, in the most trying situations, will do honour to their country. In North America, the previous trial of a warrior is neither so formal nor so severe: Though, even there, before a youth is permitted to bear arms, his patience and fortitude are proved by

14 Terrible trials undergone by their chiefs.

blows, by fire, and by insults, more intolerable to a haughty spirit than either. America.

Of the manners and customs of the North Americans more particularly, the following is the most consistent account that can be collected from the best informed and most impartial writers.

15 Customs and disposition of the North Americans more particularly.

When the Europeans first arrived in America, they found the Indians quite naked, except those parts which even the most uncultivated people usually conceal. Since that time, however, they generally use a coarse blanket, which they buy of the neighbouring planters.

Their huts or cabins are made of stakes of wood driven into the ground, and covered with branches of trees or reeds. They lie on the floor either on mats or the skins of wild beasts. Their dishes are of timber; but their spoons are made of the skulls of wild oxen, and their knives of flint. A kettle and a large plate constitute almost the whole utensils of the family. Their diet consists chiefly in what they procure by hunting; and sagamite, or pottage, is likewise one of their most common kinds of food. The most honourable furniture among them are the scalps of their enemies; with these they ornament their huts, which are esteemed in proportion to the number of this sort of spoils.

The character of the Indians is altogether founded upon their circumstances and way of life. A people who are constantly employed in procuring the means of a precarious subsistence, who live by hunting the wild animals, and who are generally engaged in war with their neighbours, cannot be supposed to enjoy much gaiety of temper, or a high flow of spirits. The Indians therefore are in general grave even unto sadness: they have nothing of that giddy vivacity peculiar to some nations of Europe, and they despise it. Their behaviour to those about them is regular, modest, and respectful. Ignorant of the arts of amusement, of which that of saying trifles agreeably is one of the most considerable, they never speak, but when they have something important to observe; and all their actions, words, and even looks, are attended with some meaning. This is extremely natural to men who are almost continually engaged in pursuits which to them are of the highest importance. Their subsistence depends entirely on what they procure with their hands; and their lives, their honour, and every thing dear to them, may be lost by the smallest inattention to the designs of their enemies. As they have no particular object to attach them to one place rather than another, they fly wherever they expect to find the necessaries of life in greatest abundance. Cities, which are the effects of agriculture and arts, they have none. The different tribes or nations are for the same reason extremely small, when compared with civilized societies, in which industry, arts, agriculture, and commerce, have united a vast number of individuals whom a complicated luxury renders useful to one another. These small tribes live at an immense distance; they are separated by a desert frontier, and hid in the bosom of impenetrable and almost boundless forests.

16 Their remarkable pensiveness and taciturnity.

There is established in each society a certain species of government, which over the whole continent of America prevails with exceeding little variation; because over the whole of this continent the manners and way

17 Form of government among them.

of

America.

of life are nearly ſimilar and uniform. Without arts, riches, or luxury, the great inſtruments of ſubjection in poliſhed ſocieties, an American has no method by which he can render himſelf conſiderable among his companions, but by ſuperiority in perſonal qualities of body or mind. But as Nature has not been very laviſh in her perſonal diſtinctions, where all enjoy the ſame education, all are pretty much equal, and will deſire to remain ſo. Liberty, therefore, is the prevailing paſſion of the Americans; and their government, under the influence of this ſentiment, is better ſecured than by the wiſeſt political regulations. They are very far, however, from deſpiſing all ſort of authority; they are attentive to the voice of wiſdom, which experience has conferred on the aged, and they enliſt under the banners of the chief in whoſe valour and military addreſs they have learned to repoſe their confidence. In every ſociety, therefore, there is to be conſidered the power of the chief and of the elders; and, according as the government inclines more to the one or to the other, it may be regarded as monarchical, or as a ſpecies of ariſtocracy. Among thoſe tribes which are moſt engaged in war, the power of the chief is naturally predominant; becauſe the idea of having a military leader was the firſt ſource of his ſuperiority, and the continual exigencies of the ſtate requiring ſuch a leader, will continue to ſupport, and even to enhance it. His power, however, is rather perſuaſive than coercive; he is reverenced as a father, rather than feared as a monarch. He has no guards, no priſons, no officers of juſtice; and one act of ill judged violence would pull him from the throne. The elders, in the other form of government, which may be conſidered as an ariſtocracy, have no more power. In ſome tribes, indeed, there are a kind of hereditary nobility, whoſe influence being conſtantly augmented by time, is more conſiderable. (See the article NIAGARA). But this ſource of power, which depends chiefly on the imagination, by which we annex to the merit of our contemporaries that of their forefathers, is too refined to be very common among the natives of America. In moſt countries, therefore, age alone is ſufficient for acquiring reſpect, influence, and authority. It is age which teaches experience, and experience is the only ſource of knowledge among a barbarous people. Among thoſe perſons, buſineſs is conducted with the utmoſt ſimplicity, and which may recal to thoſe who are acquainted with antiquity a picture of the moſt early ages. The heads of families meet together in a houſe or cabin appointed for the purpoſe. Here the buſineſs is diſcuſſed; and here thoſe of the nation, diſtinguiſhed for their eloquence or wiſdom, have an opportunity of diſplaying thoſe talents. Their orators, like thoſe of Homer, expreſs themſelves in a bold figurative ſtyle, ſtronger than refined, or rather ſoftened, nations can well bear, and with geſtures equally violent, but often extremely natural and expreſſive. When the buſineſs is over, and they happen to be well provided with food, they appoint a feaſt upon the occaſion, of which almoſt the whole nation partakes. The feaſt is accompanied with a ſong, in which the real or fabulous exploits of their forefathers are celebrated. They have dances too, though, like thoſe of the Greeks and Romans, chiefly of the military kind; and their muſic and dancing accompany every kind.

18 Their public aſſemblies.

To aſſiſt their memory, they have belts of ſmall ſhells or beads, of different colours, each repreſenting a particular object, which is marked by their colour and arrangement. At the concluſion of every ſubject on which they diſcourſe, when they treat with a foreign ſtate, they deliver one of thoſe belts; for if this ceremony ſhould be omitted, all that they have ſaid paſſes for nothing. Theſe belts are carefully depoſited in each town, as the public records of the nation; and to them they occaſionally have recourſe, when any public conteſt happens with a neighbouring tribe. Of late, as the materials of which thoſe belts are made have become ſcarce, they often give ſome ſkin in place of the wampum (the name of the beads), and receive in return preſents of a more valuable kind from our commiſſioners; for they never conſider a treaty as of any weight, unleſs every article in it be ratified by ſuch a gratification.

19 Wampum or belts.

It often happens, that thoſe different tribes or nations, ſcattered as they are at an immenſe diſtance from one another, meet in their excurſions after prey. If there ſubſiſts no animoſity between them, which ſeldom is the caſe, they behave in the moſt friendly and courteous manner; but if they happen to be in a ſtate of war, or if there has been no previous intercourſe between them, all who are not friends are deemed enemies, and they fight with the moſt ſavage fury.

20 Their wars.

War, if we except hunting, is the only employment of the men: as to every other concern, and even the little agriculture they enjoy, it is left to the women. Their moſt common motive for entering into war, when it does not ariſe from an accidental rencounter or interference, is either to revenge themſelves for the death of ſome loſt friends, or to acquire priſoners who may aſſiſt them in their hunting, and whom they adopt into their ſociety. Theſe wars are either undertaken by ſome private adventurers, or at the inſtance of the whole community. In the latter caſe, all the young men who are diſpoſed to go out to battle (for no one is compelled contrary to his inclination), give a bit of wood to the chief, as a token of their deſign to accompany him; for every thing among thoſe people is tranſacted with a great deal of ceremony and many forms. The chief who is to conduct them faſts ſeveral days, during which he converſes with no one, and is particularly careful to obſerve his dreams; which the preſumption natural to ſavages generally renders as favourable as he could deſire. A variety of other ſuperſtitions and ceremonies are obſerved. One of the moſt hideous is ſetting the war-kettle on the fire, as an emblem that they are going out to devour their enemies; which among ſome nations muſt formerly have been the caſe, ſince they ſtill continue to expreſs it in clear terms, and uſe an emblem ſignificant of the ancient uſage. Then they deſpatch a porcelain, or large ſhell, to their allies, inviting them to come along, and drink the blood of their enemies. For with the Americans, as with the Greeks of old,

21 Ceremonies before ſetting out.

"A generous friendſhip no cold medium knows;
"But with one love, with one reſentment, glows."

They think that thoſe in their alliance muſt not only adopt their enmities, but have their reſentment wound up to the ſame pitch with themſelves. And indeed no people carry their friendſhip or their reſentment ſo far

America. far as they do; and this is what should be expected from their peculiar circumstances; that principle in human nature which is the spring of the social affections, acts with so much the greater force the more it is restrained. The Americans, who live in small societies, who see few objects and few persons, become wonderfully attached to these objects and persons, and cannot be deprived of them without feeling themselves miserable. Their ideas are too confined to enable them to entertain just sentiments of humanity, or universal benevolence. But this very circumstance, while it makes them cruel and savage to an incredible degree towards those with whom they are at war, adds a new force to their particular friendships, and to the common tie which unites the members of the same tribe, or of those different tribes which are in alliance with one another. Without attending to this reflection, some facts we are going to relate would excite our wonder, without informing our reason; and we should be bewildered in a number of particulars, seemingly opposite to one another, without being sensible of the general cause from which they proceed.

Having finished all the ceremonies previous to the war, and the day appointed for their setting out on the expedition being arrived, they take leave of their friends, and exchange their clothes, or whatever moveables they have, in token of mutual friendship; after which they proceed from the town, their wives and female relations walking before, and attending them to some distance. The warriors march all dressed in their finest apparel and most showy ornaments, without any order. The chief walks slowly before them, singing the war-song, while the rest observe the most profound silence. When they come up to their women, they deliver them all their finery, and putting on their worst clothes, proceed on their expedition.

22 Ensigns.

Every nation has its peculiar ensign or standard, which is generally some beast, bird, or fish. Those among the Five Nations are the bear, otter, wolf, tortoise, and eagle; and by these names the tribes are usually distinguished. They have the figures of those animals pricked and painted on several parts of their bodies; and when they march through the woods, they commonly, at every encampment, cut the representation of their ensign on trees, especially after a successful campaign; marking at the same time the number of scalps or prisoners they have taken.

23 Military habits.

Their military dress is extremely singular. They cut off or pull out all their hair, except a spot about the breadth of two English crown pieces, near the top of their heads, and entirely destroy their eyebrows. The lock left upon their heads is divided into several parcels, each of which is stiffened and adorned with wampum, beads, and feathers of various kinds, the whole being twisted into a form much resembling the modern pompoon. Their heads are painted red down to the eyebrows, and sprinkled over with white down. The gristles of their ears are split almost quite round, and distended with wires or splinters so as to meet and tie together on the nape of the neck. These are also hung with ornaments, and generally bear the representation of some bird or beast. Their noses are likewise bored and hung with trinkets of beads, and their faces painted with various colours, so as to make an awful appearance. Their breasts are adorned with a gorget or medal, of brass, copper, or some other metal, and that dreadful weapon the scalping knife hangs by a string from their neck. America

The great qualities in an Indian war are vigilance and attention, to give and to avoid a surprise, and indeed in these they are superior to all nations in the world. Accustomed to continual wandering in the forests, having their perceptions sharpened by keen necessity, and being in every respect according to nature, their external senses have a degree of acuteness which at first view appears incredible. They can trace out their enemies at an immense distance by the smoke of their fires, which they smell, and by the tracks of their feet on the ground, imperceptible to an European eye, but which they can count and distinguish with the utmost facility. They can even distinguish the different nations with whom they are acquainted, and can determine the precise time when they passed, where an European could not, with all his glasses, distinguish footsteps at all. These circumstances, however, are of small importance, because their enemies are no less acquainted with them. When they go out, therefore, they take care to avoid making use of anything by which they might run the danger of a discovery. They light no fire to warm themselves or to prepare their victuals, they lie close to the ground all day, and travel only in the night; and marching along in files, he that closes the rear diligently covers with leaves the tracks of his own feet and of theirs who preceded him. When they halt to refresh themselves, scouts are sent out to reconnoitre the country, and beat up every place where they suspect an enemy to lie concealed. In this manner they enter unawares the villages of their foes; and, while the flower of the nation are engaged in hunting, massacre all the children, women, and helpless old men, or make prisoners of as many as they can manage, or have strength enough to be useful to their nation. But when the enemy is apprised of their design, and coming on in arms against them, they throw themselves flat on the ground among the withered herbs and leaves, which their faces are painted to resemble. Then they allow a party to pass unmolested, when all at once, with a tremendous shout, rising up from their ambush, they pour a storm of musket bullets on their foes. The party attacked returns the same cry. Every one shelters himself with a tree, and returns the fire of the adverse party, as soon as they raise themselves from the ground to give a second fire. Thus does the battle continue until the one party is so much weakened as to be incapable of farther resistance. But if the force on each side continues nearly equal, the fierce spirits of the savages, inflamed by the loss of their friends, can no longer be restrained. They abandon their distant war, they rush upon one another with clubs and hatchets in their hands, magnifying their own courage, and insulting their enemies with the bitterest reproaches. A cruel combat ensues, death appears in a thousand hideous forms, which would congeal the blood of civilized nations to behold, but which rouse the fury of savages. They trample, they insult over the dead bodies, tearing the scalp from the head, wallowing in their blood like wild beasts, and sometimes devouring their flesh. The flame rages on till it meets with no resistance; then the prisoners are secured, these unhappy men,

24 Quickness of their senses

25 Vigilance and circumspection.

26 Manner of fighting

America. whoſe fate is a thouſand times more dreadful than theirs who have died in the field. The conquerors ſet up a hideous howling to lament the friends they have loſt. They approach in a melancholy and ſevere gloom to their own village; a meſſenger is ſent to announce their arrival, and the women, with frightful ſhrieks, come out to mourn their dead brothers or their huſbands. When they are arrived, the chief relates in a low voice to the elders a circumſtantial account of every particular of the expedition. The orator proclaims aloud this account to the people; and as he mentions the names of thoſe who have fallen, the ſhrieks of the women are redoubled. The men too join in theſe cries, according as each is moſt connected with the deceaſed by blood or friendſhip. The laſt ceremony is the proclamation of the victory: each individual then forgets his private misfortunes, and joins in the triumph of his nation; all tears are wiped from their eyes, and by an unaccountable tranſition, they paſs in a moment from the bitterneſs of ſorrow to an extravagance of joy. But the treatment of the priſoners, whoſe fate all this time remains undecided, is what chiefly characterizes the ſavages.

We have already mentioned the ſtrength of their affections or reſentments. United as they are in ſmall ſocieties, connected within themſelves by the firmeſt ties, their friendly affections, which glow with the moſt intenſe warmth within the walls of their own village, ſeldom extend beyond them. They feel nothing for the enemies of their nation; and their reſentment is eaſily extended from the individual who has injured them to all others of the ſame tribe. The priſoners, who have themſelves the ſame feelings, know the intentions of their conquerors, and are prepared for them.

27 Treatment of their priſoners. The perſon who has taken the captive attends him to the cottage, where, according to the diſtribution made by the elders, he is to be delivered to ſupply the loſs of a citizen. If thoſe who receive him have their family weakened by war or other accidents, they adopt the captive into the family, of which he becomes a member. But if they have no occaſion for him, or their reſentment for the loſs of their friends be too high to endure the ſight of any connected with thoſe who were concerned in it, they ſentence him to death. All thoſe who have met with the ſame ſevere ſentence being collected, the whole nation is aſſembled at the execution, as for ſome great ſolemnity. A ſcaffold is erected, and the priſoners are tied to the ſtake, where they commence their death-ſong, and prepare for the enſuing ſcene of cruelty with the moſt undaunted courage. Their enemies, on the other ſide, are determined to put it to the proof by the moſt refined and exquiſite tortures. They begin at the extremity of his body, and gradually approach the more vital parts. One pinches out his nails by the roots, one by one; another takes a finger into his mouth, and tears off the flesh with his teeth; a third threſts the finger, mangled as it is, into the head of a pipe made red hot, which he ſmokes like tobacco; then they pound his toes and fingers to pieces between two ſtones; they cut circles about his joints, and lay bare in the bleſſy parts of his limbs, which they ſcratch gently with red-hot irons, carving, burning, and ſingling them alternately; they pull off his flesh in ſtrips, and roaſt it bit by bit, devouring it with greediness, and ſmearing their faces with the blood in an enthuſiaſm of horror and fury. When they have thus torn off the fleſh, they twiſt the bare nerves and tendons about an iron, tearing and ſnapping them, whilſt others are employed in pulling and extending their limbs in every way that can increaſe the torment. This continues often five or ſix hours; and ſometimes, ſuch is the ſtrength of the ſavages, days together. Then they frequently unbind him, to give a breathing to their fury, to think what new torments they ſhall inflict, and to refreſh the ſtrength of the ſufferer, who, wearied out with ſuch a variety of unheard-of torments, often falls into ſo profound a ſleep, that they are obliged to apply the fire to awake him, and renew his ſufferings. He is again faſtened to the ſtake, and again they renew their cruelty; they ſtick him all over with ſmall matches of wood that eaſily takes fire, but burns ſlowly; they continually run ſharp reeds into every part of his body; they drag out his teeth with pincers, and thruſt out his eyes; and laſtly, after having burned his fleſh from the bones with ſlow fires; after having ſo mangled the body that it is all but one wound; after having mutilated his face in ſuch a manner as to carry nothing human in it; after having peeled the ſkin from the head, and poured a heap of red-hot coals or boiling water on the naked ſkull—they once more unbind the wretch; who, blind, and ſtaggering with pain and weakneſs, aſſaulted and pelted upon every ſide with clubs and ſtones, now up, now down, falling into their fires at every ſtep, runs, hither and thither, until one of the chiefs, whether out of compaſſion, or weary of cruelty, puts an end to his life with a club or dagger. The body is then put into a kettle, and this barbarous employment is ſucceeded by a feaſt as barbarous.

The women, forgetting the human as well as the female nature, and transformed into ſomething worſe than furies, even outdo the men in this ſcene of horror; while the principal perſons of the country ſit round the ſtake, ſmoking and looking on without the leaſt emotion. What is moſt extraordinary, the ſufferer himſelf, in the little intervals of his torments, ſmokes too, appears unconcerned, and converſes with his torturers about different matters. Indeed, during the whole time of his execution, there ſeems a conteſt which ſhall exceed, they in inflicting the moſt horrid pains, or he in enduring them with a firmneſs and conſtancy almoſt above human: not a groan, not a ſigh, not a diſtortion of countenance eſcapes him; he poſſeſſes his mind entirely in the midſt of his torments; he recounts his own exploits; he informs them what cruelties he has inflicted upon their countrymen, and threatens them with the revenge that will attend his death; and, though his reproaches exaſperate them to a perfect madneſs of rage and fury, he continues his inſults even of their ignorance of the art of tormenting, pointing out himſelf more exquiſite methods, and more ſenſible parts of the body to be afflicted. The women have this part of courage as well as the men; and it is as rare for an Indian to behave otherwiſe as it would be for any European to ſuffer as an Indian. Such is the wonderful power of an early inſtitution, and a ferocious thirſt of glory. "I am brave and intrepid (exclaims the ſavage in the face of his tormentors); I do not fear death, nor any kind of tortures; thoſe who fear them are cowards; they are leſs than women;

29 Conſtancy of the ſufferers.

America

women: life is nothing to those who have courage: May my enemies be confounded with despair and rage! Oh! that I could devour them, and drink their blood to the last drop."

V. Surprising contrast in the American character.

But neither the intrepidity on one side, nor the inflexibility on the other, are among themselves matter of astonishment: for vengeance, and fortitude in the midst of torment, are duties which they consider as sacred; they are the effects of their earliest education, and depend upon principles instilled into them from their infancy. On all other occasions they are humane and compassionate. Nothing can exceed the warmth of their affection towards their friends, who consist of all those who live in the same village, or are in alliance with it. Among these all things are common; and this, though it may in part arise from their not possessing very distinct notions of separate property, is chiefly to be attributed to the strength of their attachments; because in every thing else, with their lives as well as their fortunes, they are ready to serve their friends. Their houses, their provisions, even their young women, are not enough to oblige a guest. Has any one of these succeeded ill in his hunting; has his harvest failed; or is his house burned—he feels no other effect of his misfortune, than that it gives him an opportunity of experiencing the benevolence and regard of his fellow-citizens. On the other hand, to the enemies of his country, or to those who have privately offended, the American is implacable. He conceals his sentiments, he appears reconciled, until by some treachery or surprise he has an opportunity of executing a horrible revenge. No length of time is sufficient to allay his resentment; no distance of place great enough to protect the object: he crosses the steepest mountains, he pierces the most impracticable forests, and traverses the most hideous bogs and deserts for several hundreds of miles; bearing the inclemency of the seasons, the fatigue of the expedition, the extremes of hunger and thirst, with patience and cheerfulness, in hopes of surprising his enemy, on whom he exercises the most shocking barbarities, even to the eating of his flesh. To such extremes do the Indians push their friendship or their enmity; and such indeed, in general, is the character of all strong and uncultivated minds.

VI. Treatment of their dead friends.

But what we have said respecting the Indians would be a faint picture, did we omit observing the force of their friendship, which principally appears by the treatment of their dead. When any one of the society is cut off, he is lamented by the whole. On this occasion a thousand ceremonies are practised, denoting the most lively sorrow. No business is transacted, however pressing, till all the pious ceremonies due to the dead are performed. The body is washed, anointed, and painted. Then the women lament the loss with hideous howlings, intermixed with songs which celebrate the great actions of the deceased and his ancestors. The men mourn in a less extravagant manner. The whole village is present at the interment, and the corpse is habited in the most sumptuous ornaments. Close to the body of the defunct are placed his bows and arrows, with whatever he valued most in his life, and a quantity of provisions for his subsistence on the journey which he is supposed to take. This ceremony, like every other, is attended with feasting. The funeral being ended, the relations of the deceased confine themselves to their huts for a considerable time to indulge their grief. After an interval of [illegible] they visit the grave, repeat their sorrow, new clothe the [illegible] of the body, and set over again all the [illegible] of the funeral.

Among the various tokens of [illegible] deceased friends, the most remarkable is [illegible] the *feast of the dead*, or the *feast of souls*. The day for this ceremony is appointed in the council of the nation, who give orders for every thing which [illegible] to celebrate it with pomp and magnificence, and the neighbouring nations are invited to partake of the entertainment. At this time, all [illegible] the preceding feast of the kind are taken out of their graves. Even those who have been interred at the greatest distance from the villages are diligently sought for, and conducted to this rendezvous of the dead, which exhibits a scene of horror beyond the power of description.—When the feast is concluded, the bodies are stuffed in the finest skins which can be procured, and after being exposed for some time in this pomp, are again committed to the earth with great solemnity, which is succeeded by funeral games.

VII. Superstitions.

Their taste for war, which forms the chief ingredient in their character, gives a strong bias to their religion. Areskoui, or the god of battle, is reckoned as the great god of the Indians. Him they invoke before they go into the field; and according as his disposition is more or less favourable to them, they conclude they will be more or less successful. Some nations worship the sun and moon; among others there are a number of traditions, relative to the creation of the world and the history of the gods; traditions which resemble the Grecian fables, but which are still more absurd and inconsistent. But religion is not the prevailing character of the Indians; and except when they have some immediate occasion for the assistance of their gods, they pay them no sort of worship. Like all rude nations, however, they are strongly addicted to superstition. They believe in the existence of a number of good and bad genii or spirits, who interfere in the affairs of mortals, and produce all our happiness or misery. It is from the evil genii, in particular, that our diseases proceed; and it is to the good genii we are indebted for a cure. The ministers of the genii are the jugglers, who are also the only physicians among the [illegible]. These jugglers are supposed to be inspired by the good genii, most commonly in their dreams, with the knowledge of future events; they are called in to the assistance of the sick, and are supposed to be informed by the genii whether they will get over the disease, and in what way they must be treated. But these spirits are extremely simple in their system of physic, and, in almost every disease, direct the juggler to the same remedy. The patient is enclosed in a narrow cabin, in the midst of which is a stove red hot: on this they throw water, until he is well soaked with the warm vapour and his own sweat. Then they hurry him from this bagnio, and plunge him suddenly into the next river. This simple method, which costs many their lives, often performs very extraordinary cures. The jugglers have likewise the art of some specifics of wonderful efficacy; and all the savages are dexterous in curing wounds by the application of herbs. But the power of these remedies is [illegible]

ways attributed to the magical ceremonies with which they are administered.

Though the women generally bear the laborious part of domestic economy, their condition is far from being so forlorn as it appears. On the contrary, the greatest respect is paid by the men to the female sex. The women even hold their councils, and have their share in all deliberations which concern the state. Polygamy is practised by some nations, but is not general. In most, they content themselves with one wife; but a divorce is admitted in case of adultery. No nation of the Americans is without a regular marriage, in which there are many ceremonies; the principal of which is, the bride's presenting the bridegroom with a plate of their corn. The women, though before incontinent, are remarkable for chastity after marriage.

34 Their ardent love of liberty.

Liberty, in its full extent, being the darling passion of the Indians, their education is directed in such a manner as to cherish this disposition to the utmost. Hence children are never upon any account chastised with blows, and they are seldom even reprimanded. Reason, they say, will guide their children when they come to the use of it, and before that time their faults cannot be very great: but blows might damp their free and martial spirit, by the habit of a slavish motive to action. When grown up, they experience nothing like command, dependence, or subordination; even strong persuasion is industriously withheld by those who have influence among them.—No man is held in great esteem, unless he has increased the strength of his country with a captive, or adorned his hut with a scalp of one of his enemies.

Controversies among the Indians are few, and quickly decided. When any criminal matter is so flagrant as to become a national concern, it is brought under the jurisdiction of the great council: but in ordinary cases, the crime is either revenged or compromised by the parties concerned. If a murder be committed, the family which has lost a relation prepares to retaliate on that of the offender. They often kill the murderer; and when this happens, the kindred of the last person slain look upon themselves to be as much injured, and to have the same right to vengeance, as the other party. In general, however, the offender absents himself; the friends send compliments of condolence to those of the person that has been murdered. The head of the family at length appears with a number of presents, the delivery of which he accompanies with a formal speech. The whole ends, as usual, in mutual feastings, songs, and dances. If the murder is committed by one of the same family or cabin, that cabin has the full right of judgement within itself, either to punish the guilty with death, or to pardon him, or to oblige him to give some recompense to the wife or children of the slain. Instances of such a crime, however, very seldom happen; for their attachment to those of the same family is remarkably strong, and is said to produce such friendships as may vie with the most celebrated in fabulous antiquity.

35 Crimes and punishments.

36 Peculiar manners of different nations.

Such, in general, are the manners and customs of the Indian nations; but every tribe has something peculiar to itself. Among the Hurons and Natches, the dignity of the chief is hereditary, and the right of succession in the female line. When this happens to be extinct, the most respectable matron of the tribe makes choice of whom the pleases, to succeed.

American governments.

The Cherokees are governed by several sachems or chiefs, elected by the different villages; as are also the Creeks and Chactaws. The two latter punish adultery in a woman by cutting off her hair, which they will not suffer to grow till the corn is ripe the next season; but the Illinois, for the same crime, cut off the women's noses and ears.

The Indians on the lakes are formed into a sort of empire; and the emperor is elected from the eldest tribe, which is that of the Ottowawaws. He has the greatest authority of any chief that has appeared on the continent since our acquaintance with it. A few years ago, the person who held this rank formed a design of uniting all the Indian nations under his sovereignty; but he miscarried in the attempt.

37 Longevity of the Indians.

In general, the American Indians live to a great age, although it is not possible to know from themselves the exact number of their years. It was asked of an Indian, who appeared to be extremely old, what age he was of? I am above twenty, was his reply. Upon putting the question in a different form, by reminding him of certain circumstances in former times, My machu, said he, spoke to me when I was young of the Incas; and he had seen these princes. According to this reply, there must have elapsed, from the date of his machu's (his grandfather's) remembrance to that time, a period of at least 232 years. The man who made this reply appeared to be 120 years of age: for, besides the whiteness of his hair and beard, his body was almost bent to the ground; without, however, showing any other marks of debility or suffering. This happened in 1764. This longevity, attended in general with uninterrupted health, is probably the consequence in part of their vacancy from all serious thought and employment, joined also with the robust texture and conformation of their bodily organs. If the Indians did not destroy one another in their almost perpetual wars, and if their habits of intoxication were not so universal and incurable, they would be, of all the races of men who inhabit the globe, the most likely to prolong, not only the bounds, but the enjoyments, of animal life to their utmost duration.

38 Other pictures of the Americans.

Let us now attend to other pictures which have been given of the aboriginal inhabitants of the new world. The vices and defects of the American Indians have by several writers been most unaccountably aggravated, and every virtue and good quality denied them. Their cruelties have been already described and accounted for. The following anecdote of an Algonquin woman we find adduced as a remarkable proof of their innate thirst of blood. That nation being at war with the Iroquois, she happened to be made prisoner, and was carried to one of the villages belonging to them. Here she was stripped naked, and her hands and feet bound with ropes in one of their cabins. In this condition she remained ten days, the savages sleeping round her every night. The eleventh night, while they were asleep, she found means to disengage one of her hands, with which she immediately freed herself from the ropes, and went to the door. Though she had now an opportunity of escaping unperceived,

39 Anecdotes of an Algonquin woman.

America. ceived, her revengeful temper could not let slip so favourable an opportunity of killing one of her enemies. The attempt was manifestly at the hazard of her own life; yet, snatching up a hatchet, she killed the savage that lay next her; and, springing out of the cabin, concealed herself in a hollow tree which she had observed the day before. The groans of the dying person soon alarmed the other savages, and the young ones immediately set out in pursuit of her.—Perceiving from her tree, that they all directed her course one way, and that no savage was near her, she left her sanctuary, and, flying in an opposite direction, ran into a forest without being perceived. The second day after this happened, her footsteps were discovered, and they pursued her with such expedition, that the third day she discovered her enemies at her heels. Upon this she threw herself into a pond of water; and, diving among some weeds and bulrushes, she could just breathe above water without being perceived. Her pursuers, after making the most diligent search, were forced to return.—For 35 days this woman held on her course through woods and deserts, without any other sustenance than roots and wild berries. When she came to the river St Lawrence, she made with her own hands a kind of a wicker raft, on which she crossed it. As she went by the French fort Trois Rivieres, without well knowing where she was, she perceived a canoe full of savages; and, fearing they might be Iroquois, ran again into the woods, where she remained till sunset.—Continuing her course, soon after she saw the Trois Rivieres; and was then discovered by a party whom she knew to be Hurons, a nation in alliance with the Algonquins. She then squatted down behind a bush, calling out to them that she was not in a condition to be seen, because she was naked. They immediately threw her a blanket, and then conducted her to the fort, where she recounted her story.

40 Reproached with pusillanimity.

Personal courage has been denied them. In proof of their pusillanimity, the following incidents are quoted from Charlevoix by Lord Kames, in his Sketches of the History of Man. "The fort de Vercheres in Canada, belonging to the French, was, in the year 1690, attacked by some Iroquois. They approached silently, preparing to scale the palisade, when some musket shot made them retire. Advancing a second time, they were again repulsed, wondering that they should discover none but a woman who was seen everywhere. This was Madame de Vercheres, who appeared as resolute as if supported by a numerous garrison. The hopes of storming a place without men to defend it occasioned reiterated attacks. After two days siege, they retired, fearing to be intercepted in their retreat. Two years after, a party of the same nation appeared before the fort so unexpectedly, that a girl of fourteen, daughter of the proprietor, had but time to shut the gate. With the young woman there was not a soul but one raw soldier. She showed herself with her assistant, sometimes in one place and sometimes in another; changing her dress frequently, in order to give some appearance of a garrison; and always fired opportunely. The faint-hearted Iroquois decamped without success."

There is no instance, it is said, either of a single Indian facing an individual of any other nation in fair and open combat, or of their jointly venturing to try the fate of battle with an equal number of any foes. Even with the greatest superiority of numbers, they dare not meet an open attack. Yet, notwithstanding this want of courage, they are still formidable; nay, it has been known, that a small party of them has routed a much superior body of regular troops: but this can only happen when they have imprinted them in the fastnesses of their forests, where the covert of the wood may conceal them until they take their aim with the utmost certainty. After one such discharge they immediately retreat, without leaving the smallest trace of their route. It may easily be supposed, that an onset of this kind must produce confusion even among the steadiest troops, when they can neither know the number of their enemies, nor perceive the place where they lie in ambush. America.

41 Accused of perfidy.

Perfidy combined with cruelty has been also made a part of their character. Don Ulloa relates, That the Indians of the country called *Natches*, in Louisiana, laid a plot for massacring in one night every individual belonging to the French colony established there. This plot they actually executed, notwithstanding the seeming good understanding that subsisted between them and these European neighbours. Such was the secrecy which they observed, that no person had the least suspicion of their design until the blow was struck. One Frenchman alone escaped, by favour of the darkness, to relate the disaster of his countrymen. The compassion of a female Indian contributed also in some measure to his exemption from the general massacre. The tribe of Natches had invited the Indians of other countries, even to a considerable distance, to join in the same conspiracy. The day, or rather the night, was fixed, on which they were to make an united attack on the French colonists. It was intimated by sending a parcel of rods, more or less numerous according to the local distance of each tribe, with an injunction to abstract one rod daily; the day on which the last fell to be taken away being that fixed for the execution of their plan. The women were partners of the bloody secret. The parcels of rods being thus distributed, that belonging to the tribe of Natches happened to remain in the custody of a female. This woman, either moved by her own feelings of compassion, or by the commiseration expressed by her female acquaintances in the view of the proposed scene of bloodshed, abstracted one day three or four of the rods, and thus anticipated the term of her tribe's proceeding to the execution of the general conspiracy. The consequence of this was, that the Natches were the only actors in this carnage; their distant associates having still several rods remaining at the time when the former made the attack. An opportunity was thereby given to the colonists in those quarters to take measures for their defence, and for preventing a more extensive execution of the design.

It was by conspiracies similar to this that the Indians of the province of Macas, in the kingdom of Quito, destroyed the opulent city of Logrogno, the colony of Guambaya, and its capital Sevilla del Oro; and that so completely, that it is no longer known in what place these settlements existed, or where that abundance of gold was found from which the last mentioned city took the addition to its name. Like ravages have been committed upon l'Imperiale in Chili, the colonies of the Missions of Chuncas, those of Darien in Terra Firma, and

America. and many other places which have afforded ſcenes of this barbarous ferocity. Theſe conſpiracies are always carried on in the ſame manner. The ſecret is inviolably kept, the actors aſſemble at the preciſe hour appointed, and every individual is animated with the ſame ſanguinary purpoſes. The males that fall into their hands are put to death with every ſhocking circumſtance that can be ſuggeſted by a cool and determined cruelty. The females are carried off, and preſerved as monuments of their victory, to be employed as their occaſions require.

Nor can this odious cruelty and treachery, it is ſaid, be juſtly aſcribed to their ſubjection to a foreign yoke, ſeeing the ſame character belongs equally to all the original inhabitants of this vaſt continent, even thoſe who have preſerved their independence moſt completely. Certain it is, continues he, that theſe people, with the moſt limited capacities for every thing elſe, diſplay an aſtoniſhing degree of penetration and ſubtlety with reſpect to every object that involves treachery, bloodſhed, and rapine. As to theſe, they ſeem to have been all educated at one ſchool; and a ſecret, referring to any ſuch plan, no conſideration on earth can extort from them.

42 Their underſtandings alſo have been repreſented as not leſs contemptible than their manners are groſs and brutal. Many nations are neither capable of forming an arrangement for futurity; nor does their ſolicitude or foreſight extend ſo far. They ſet no value upon thoſe things of which they are not in ſome immediate want. In the evening, when a Carib is going to reſt, no conſideration will tempt him to ſell his hammock; but in the morning he will part with it for the ſlighteſt trifle. At the cloſe of winter, a North American, mindful of what he has ſuffered from the cold, ſets himſelf with vigour to prepare materials for erecting a comfortable hut to protect him againſt the inclemency of the ſucceeding ſeaſon: but as ſoon as the weather becomes mild, he abandons his work, and never thinks of it more till the return of the cold compels him to reſume it.—In ſhort, to be free from labour ſeems to be the utmoſt wiſh of an American. They will continue whole days ſtretched in their hammocks, or ſeated on the earth, without changing their poſture, raiſing their eyes, or uttering a ſingle word. They cannot compute the ſucceſſion of days nor of weeks. The different aſpects of the moon alone engage their attention as a meaſure of time. Of the year they have no other conception than what is ſuggeſted to them by the alternate heat of ſummer and cold of winter; nor have they the leaſt idea of applying to this period the obvious computation of the months which it contains. When it is aſked of any old man in Peru, even the moſt civilized, what age he is of; the only anſwer he can give is the number of caciques he has ſeen. It often happens, too, that they only recollect the moſt diſtant of theſe princes in whoſe time certain circumſtances had happened peculiarly memorable, while of thoſe that lived in a more recent period they have loſt all remembrance.

43 The ſame groſs ſtupidity is alleged to be obſervable in thoſe Indians who have retained their original liberty. They are never known to fix the dates of any events in their minds, or to trace the ſucceſſion of circumſtances that have ariſen from ſuch events. Their imagination takes in only the preſent, and in that only what intimately concerns themſelves. Nor can diſcipline or inſtruction overcome this natural defect of apprehenſion. In fact, the ſubjected Indians in Peru, who have a continual intercourſe with the Spaniards, who are furniſhed with curates perpetually occupied in giving them leſſons of religion and morality, and who mix with all ranks of the civilized ſociety eſtabliſhed among them, are almoſt as ſtupid and barbarous as their countrymen who have had no ſuch advantages. The Peruvians, while they lived under the government of their Incas, preſerved the records of certain remarkable events. They had alſo a kind of regular government, deſcribed by the hiſtorians of the conqueſt of Peru. This government originated entirely from the attention and abilities of their princes, and from the regulations enacted by them for directing the conduct of their ſubjects. This ancient degree of civilization among them gives ground to preſume, that their legiſlators ſprung from ſome race more enlightened than the other tribes of Indians; a race of which no individual ſeems to remain in the preſent times. America.

44 Vanity and conceit are ſaid to be blended with their ignorance and treachery. Notwithſtanding all they ſuffer from Europeans, they ſtill, it is ſaid, conſider themſelves as a race of men far ſuperior to their conquerors. This proud belief, ariſing from their perverted ideas of excellence, is univerſal over the whole known continent of America. They do not think it poſſible that any people can be ſo intelligent as themſelves. When they are detected in any of their plots, it is their common obſervation, that the Spaniards, or *Viracochas*, want to be as knowing as they are. Thoſe of Louiſiana, and the countries adjacent, are equally vain of their ſuperior underſtanding, confounding that quality with the cunning which they themſelves conſtantly practiſe. The whole object of their tranſactions is to overreach thoſe with whom they deal. Yet, though faithleſs themſelves, they never forgive the breach of promiſe on the part of others. While the Europeans ſeek their amity by preſents, they give themſelves no concern to ſecure a reciprocal friendſhip. Hence, probably, ariſes their idea, that they muſt be a ſuperior race of men, in ability and intelligence, to thoſe who are at ſuch pains to court their alliance and avert their enmity. Their vanity and conceit.

45 Their natural eloquence has alſo been decried. The free tribes of ſavages who enter into conventions with the Europeans, it is obſerved, are accuſtomed to make long, pompous, and, according to their own notions, ſublime harangues, but without any method or connection. The whole is a collection of diſjointed metaphors and compariſons. The light, heat, and courſe of the ſun, form the principal topic of their diſcourſe; and theſe unintelligible reaſonings are always accompanied with violent and ridiculous geſtures. Numberleſs repetitions prolong the oration, which, if not interrupted, would laſt whole days: At the ſame time, they meditate very accurately beforehand, in order to avoid mentioning any thing but what they are deſirous to obtain. This pompous faculty of making ſpeeches is alſo one of the grounds on which they conceive themſelves to be ſuperior to the nations of Europe: They imagine that it is their eloquence that procures them the favours they aſk. The ſubjected Indians converſe Their eloquence diſparaged.

preciſely

America. precisely in the same style. Prolix and tedious, they never know when to stop; so that, excepting by the difference in language, it would be impossible, in this respect, to distinguish a civilized Peruvian from an inhabitant of the most savage districts to the northward.

46 All these views partial, and not free from misrepresentation.

But such partial and detached views as the above, were they even free from misrepresentation, are not the just ground upon which to form an estimate of their character. Their qualities, good and bad (for they certainly possess both), their way of life, the state of society among them, with all the circumstances of their condition, ought to be considered in connexion, and in regard to their mutual influence. Such a view has been given in the preceding part of this article: from which, it is hoped, their real character may be easily deduced.

Many of the disagreeable traits exhibited in the anecdotes just quoted, are indeed extracted from Don Ulloa, an author of credit and reputation, but a Spaniard, and evidently biassed in some degree by a desire to palliate the enormities of his countrymen in that quarter of the globe. And with regard to the worst and least equivocal parts of the American character, cruelty and revenge, it may be fairly questioned, whether the instances of these, either in respect of their cause or their atrocity, be at all comparable to those exhibited in European history, and staining the annals of Christendom:—to those, for instance, of the Spaniards themselves, at their first discovery of America; to those indicated by the engines found on board their mighty Armada; to those which, in cold blood, were perpetrated by the Dutch at Amboyna; to the dragoonings of the French; to their religious massacres; or even to the *tender mercies* of the Inquisition?

47 The physical descriptions of Buffon and De Paw refuted. *Hist. of Mexico*, vol. ii. p. 328.

Still harsher, however, are the descriptions given by Buffon and de Paw of the natives of this whole continent, in which the most mortifying degeneracy of the human race, as well as of all the inferior animals, is asserted to be conspicuous. Against those philosophers, or rather theorists, the Americans have found an able advocate in the abbé Clavigero; an historian whose situation and long residence in America afforded him the best means of information, and who, though himself a subject of Spain, appears superior to prejudice, and disdains in his description the glosses of policy.

Concerning the stature of the Americans, M. de Paw says in general, that although it is not equal to the stature of the Castilians, there is but little difference between them. But the abbé Clavigero evinces that the Indians who inhabit those countries lying between 9 and 40 degrees of north latitude, which are the limits of the discoveries of the Spaniards, are more than five Parisian feet in height, and that those who do not reach that stature are as few in number among the Indians as they are amongst the Spaniards. It is besides certain, that many of those nations, as the *Apaches*, the *Hiaquis*, the *Pimos*, and *Cochimies*, are at least as tall as the tallest Europeans; and that, in all the vast extent of the new world, no race of people has been found, except the Esquimaux, so diminutive in stature as the Laplanders, the Samojeds, and Tartars, in the north of the old continent. In this respect, therefore, the inhabitants of the two continents are upon an equality.

Of the shape and character of the Mexican Indians the abbé gives a most advantageous description; which he asserts no one who reads it in America will contradict, unless he views them with the eye of a prepossessed mind. It is true, that Ulloa says, in speaking of the Indians of Quito, he had observed, "that an erect people abounded among them; that they were either irregularly diminutive, or monstrous in some other respect; that they became either mute, dumb, or blind, or wanted some limb of their body." Having therefore made some inquiry respecting this singularity of the Quitans, the abbé found that such defects were neither caused by bad manners, nor by the climate, but by the mistaken and blind humanity of their parents, who, in order to free their children from the hardships and toils to which the healthy Indians are subjected by the Spaniards, fix some deformity or weakness upon them, that they may become useless: a circumstance of misery which does not happen in other countries of America, nor in those places of the same kingdom of Quito, where the Indians are under no such oppression. M. de Paw, and, in agreement with him, Dr Robertson, says, that no deformed persons are to be found among the savages of America; because, like the ancient Lacedemonians, they put to death those children which are born hunch-backed, blind, or defective in any limb; but that in those countries where they are formed into societies, and the vigilance of their rulers prevents the murder of such infants, the number of their deformed individuals is greater than it is in any country of Europe. This would make an exceeding good solution of the difficulty if it were true; but if, possibly, there has been in America a tribe of savages who have imitated the barbarous example of the celebrated Lacedemonians, it is certain that those authors have no grounds to impute such inhumanity to the rest of the Americans; for that it has not been the practice, at least with the far greater part of those nations, is to be demonstrated from the attestations of authors the best acquainted with their customs.

48 Errors concerning their want of beard, &c.

No argument against the new world can be drawn from the colour of the Americans; for their colour is less distant from the white of the Europeans than it is from the black of the Africans, and a great part of the Asiatics. The hair of the Mexicans, and of the greater part of the Indians, is, as we have already said, coarse and thick; on their face they appear to have little, and in general none on their arms and legs: but it is an error to say, as M. de Paw does, that they are entirely destitute of hair on all the other parts of their body. This is one of the many passages of the Philosophical Researches, at which the Mexicans, and all the other nations, must smile to find an European philosopher so eager to divest them of the dress they had from nature. Don Ulloa, indeed, in the description which he gives of the Indians of Quito, says, that hair neither grows upon the men nor upon the women when they arrive at puberty, as it does on the rest of mankind: but, whatever singularity may attend the Quitans, on occasion this circumstance, there is no doubt that among the Americans in general, the period of puberty is accompanied with the same symptoms as it is among

ovules

America. other nations of the world. In fact, with the North Americans, it is disgraceful to be hairy on the body. They say it likens them to hogs. They therefore pluck out the hair as fast as it appears. But the traders who marry their women, and prevail on them to discontinue this practice, say, that nature is the same with them as with the whites. As to the beards of the men, had Buffon or De Paw known the pains and trouble it costs them to pluck out by the roots the hair that grows on their faces, they would have seen that nature had not been deficient in that respect. Every nation has its customs. "I have seen an Indian beau, with a looking glass in his hand (says Mr Jefferson), examining his face for hours together, and plucking out by the roots every hair he could discover, with a kind of tweezer made of a piece of fine brass wire, that had been twisted round a stick, and which he used with great dexterity.

50 Their form and aspect contrasted with those of some other nations.

The very aspect of an Angolan, Mandingan, or Congan, would have shocked M. de Paw, and made him recall that censure which he passes on the colour, the make, and hair, of the Americans. What can be imagined more contrary to the idea we have of beauty, and the perfection of the human frame, than a man whose body emits a rank smell, whose skin is as black as ink, whose head and face are covered with black wool instead of hair, whose eyes are yellow and bloody, whose lips are thick and blackish, and whose nose is flat? Such are the inhabitants of a very large portion of Africa, and of many islands of Asia. What men can be more imperfect than those who measure no more than four feet in stature, whose faces are long and flat, the nose compressed, the irides yellow-black, the eyelids turned back towards the temples, the cheeks extraordinarily elevated, their mouths monstrously large, their lips thick and prominent, and the lower part of their visages extremely narrow? Such, according to Count de Buffon, are the Laplanders, the Zemblans, the Borandines, the Samojeds, and Tartars in the east. What objects more deformed than men whose faces are too long and wrinkled even in their youth, their noses thick and compressed, their eyes small and sunk, their cheeks very much raised, their upper jaw low, their teeth long and disunited, eyebrows so thick that they shade the eyes; the eyelids thick, some bristles on their faces instead of beard, large thighs and small legs? Such is the picture Count de Buffon gives of the Tartars; that is, of those people who, as he says, inhabit a tract of land in Asia 1200 leagues long and upwards, and more than 750 broad. Among these the Calmucks are the most remarkable for their deformity; which is so great, that, according to Tavernier, they are the most brutal men of all the universe. Their faces are so broad, that there is a space of five or six inches between their eyes, according as Count de Buffon himself affirms. In Calicut, in Ceylon, and other countries of India, there is, say Pyrard and other writers on these regions, a race of men who have one or both of their legs as thick as the body of a man; and that this deformity among them is almost hereditary. The Hottentots, besides other gross imperfections, have that monstrous irregularity attending them of a callous appendage extending from the os pubis downwards, according to the testimony of the historians of the Cape of Good Hope. Scuys, Gemelli, and other travellers affirm, that in the kingdom of Lambry, in the islands of Formosa and of Mindoro, men have been found with tails. Bontius says, that a thing of this kind in men is nothing else than an elongation of the os coccygis; but what is a tail in quadrupeds but the elongation of that bone, though divided into distinct articulations? However it may be, it is certain, that that elongation renders those Asiatics fully as irregular as if it was a real tail. America.

If we were, in like manner, to go through the nations of Asia and Africa, we should hardly find any extensive country where the colour of men is not darker, where there are not stronger irregularities observed, and grosser defects to be found in them, than M. de Paw finds fault with in the Americans. The colour of the latter is a good deal clearer than that of almost all the Africans and the inhabitants of southern Asia. Even their alleged scantiness of beard is common to the inhabitants of the Philippine islands, and of all the Indian archipelago, to the famous Chinese, Japanese, Tartars, and many other nations of the old continent. The imperfections of the Americans, however great they may be represented to be, are certainly not comparable with the defects of that immense people, whose character we have sketched, and others whom we omit.

51 Their constitution and corporal abilities

M. de Paw represents the Americans to be a feeble and diseased set of nations; and, in order to demonstrate the weakness and disorder of their physical constitution, adduces several proofs equally ridiculous and ill-founded, and which it will not be expected we should enumerate. He alleges, among other particulars, that they were overcome in wrestling by all the Europeans, and that they sunk under a moderate burden; that by a computation made, 200,000 Americans were found to have perished in one year from carrying of baggage. With respect to the first point, the abbé Clavigero observes, it would be necessary that the experiment of wrestling was made between many individuals of each continent, and that the victory should be attested by the Americans as well as the Europeans. It is not, however, meant to insist, that the Americans are stronger than the Europeans. They may be less strong, without the human species having degenerated in them. The Swiss are stronger than the Italians; and still we do not believe the Italians are degenerated, nor do we tax the climate of Italy. The instance of 200,000 Americans having died in one year under the weight of baggage, were it true, would not convince us so much of the weakness of the Americans, as of the inhumanity of the Europeans. In the same manner that those 200,000 Americans perished, 200,000 Prussians would also have perished, had they been obliged to make a journey of between 300 and 400 miles, with 100 pounds of burden upon their backs; if they had collars of iron about their necks, and were obliged to carry that load over rocks and mountains; if those who became exhausted with fatigue, or wounded their feet so as to impede their progress, had their heads cut off that they might not retard the pace of the rest; and if they were not allowed but a small morsel of bread to enable them to support so severe a toil. Las Casas, from whom M. de Paw got the account of the 200,000 Americans who died under the fatigue of carrying baggage, relates also all the above-mentioned circumstances. If

America. that author therefore is to be credited in the laft, he is alſo to be credited in the firſt. But a philoſopher who vaunts the phyſical and moral qualities of Europeans over thoſe of the Americans, would have done better, we think, to have ſuppreſſed facts ſo opprobrious to the Europeans themſelves.

52 Their manner and induſtry.

Nothing in fact demonſtrates ſo clearly the robuſtneſs of the Americans as thoſe various and laſting fatigues in which they are continually engaged. M. de Paw ſays, that when the new world was diſcovered, nothing was to be ſeen but thick woods; that at preſent there are ſome lands cultivated, not by the Americans, however, but by the Africans and Europeans; and that the ſoil in cultivation is to the ſoil which is uncultivated as 2000 to 2,000,000. Theſe three aſſertions the abbé demonſtrates to be preciſely as many errors. Since the conqueſt, the Americans alone have been the people who have ſupported all the fatigues of agriculture in all the vaſt countries of the continent of South America, and in the greater part of thoſe of North America ſubject to the crown of Spain. No European is ever to be ſeen employed in the labours of the field. The Moors who, in compariſon of the Americans, are very few in number in the kingdom of New Spain, are charged with the culture of the ſugar cane and tobacco, and the making of ſugar; but the ſoil deſtined for the cultivation of thoſe plants is not, with reſpect to all the cultivated land of that country, in the proportion of one to two thouſand. The Americans are the people who labour on the ſoil. They are the tillers, the ſowers, the weeders, and the reapers of the wheat, of the maize, of the rice, of the beans, and other kinds of grain and pulſe; of the cacao, of the vanilla, of the cotton, of the indigo, and all other plants uſeful to the ſuſtenance, the clothing, and commerce of thoſe provinces; and without them ſo little can be done, that in the year 1762, the harveſt of wheat was abandoned in many places on account of a ſickneſs which prevailed, and prevented the Indians from reaping it. But this is not all; the Americans are they who cut and tranſport all the neceſſary timber from the woods; who cut, tranſport, and work the ſtones; who make lime, plaiſter, and tiles; who conſtruct all the buildings of that kingdom, except a few places where none of them inhabit; who open and repair all the roads; who make the canals and ſluices, and clean the cities. They work in many mines of gold, of ſilver, of copper, &c.; they are the ſhepherds, herdſmen, weavers, potters, baſket-makers, bakers, curriers, day-labourers, &c.; in a word, they are the perſons who bear all the burden of public labours. Theſe, ſays our juſtly indignant author, are the employments of the weak, daſtardly, and uſeleſs Americans; while the vigorous M. de Paw, and other indefatigable Europeans, are occupied in writing invectives againſt them.

53 Theſe a ſufficient proof of their healthineſs and ſtrength.

Theſe labours, in which the Indians are continually employed, certainly atteſt their healthineſs and ſtrength; for if they are able to undergo ſuch fatigues, they cannot be diſeaſed, nor have an exhauſted ſtream of blood in their veins, as M. de Paw inſinuates. In order to make it be believed that their conſtitutions are vitiated, he copies whatever he finds written by hiſtorians of America, whether true or falſe, reſpecting the diſeaſes which reign in ſome particular countries of that great continent. It is not to be denied, that in ſome countries in the wide extents of America, men are expoſed more than elſewhere to the inconveniences which are occaſioned by the intemperature of the air, or the noxious quality of the elements; but it is certain, according to the aſſertion of many reſpectable authors acquainted with the new world, that the American countries are for the moſt part healthy; and if the Americans were diſpoſed to retaliate on M. de Paw, and other European authors who write as he does, they would have abundant ſubject of materials to throw diſcredit on the clime or the old continent, and the conſtitution of its inhabitants, in the endemic diſtempers which prevail there. America.

Laſtly, The ſuppoſed feebleneſs and unſound bodily habit of the Americans do not correſpond with the length of their lives. Among thoſe Americans whoſe great fatigues and exceſſive toils do not anticipate their death, there are not a few who reach the age of 80, 90, and 100 or more years, as formerly mentioned; and what is more, without there being obſerved in them that decay which time commonly produces in the hair, in the teeth, in the ſkin, and in the muſcles of the human body. This phenomenon, ſo much admired by the Spaniards who reſide in Mexico, cannot be aſcribed to any other cauſe than the vigour of their conſtitutions, the temperance of their diet, and the ſalubrity of their clime. Hiſtorians, and other perſons who have ſojourned there for many years, report the ſame thing of other countries of the new world.

54 Their mental qualities.

As to the mental qualities of the Americans, M. de Paw has not been able to diſcover any other characters than a memory ſo feeble, that to-day they do not remember what they did yeſterday; a capacity ſo blunt, that they are incapable of thinking, or putting their ideas in order; a diſpoſition ſo cold, that they feel no excitement of love; a daſtardly ſpirit, and a genius that is torpid and indolent. Many other Europeans, indeed, and what is ſtill more wonderful, many of thoſe children or deſcendants of Europeans who are born in America, think as M. de Paw does; ſome from ignorance, ſome from want of reflection, and others from hereditary prejudice and prepoſſeſſion. But all this and more would not be ſufficient to invalidate the teſtimonies of other Europeans, whoſe authority has a great deal more weight, both becauſe they were men of great judgement, learning, and knowledge of theſe countries, and becauſe they gave their teſtimony in favour of ſtrangers againſt their own countrymen. In particular, Acoſta, whoſe natural and moral hiſtory even M. de Paw commends as *an excellent work*, employs the whole ſixth book in demonſtrating the good ſenſe of the Americans, by an explanation of their ancient government, their laws, their hiſtories in paintings and knots, kalendars, &c. M. de Paw thinks the Americans are ſtupid; Acoſta, on the other hand, reputes thoſe perſons weak and preſumptuous who think them ſo. M. de Paw ſays, that the moſt acute Americans were inferior in induſtry and ſagacity to the rudeſt nations of the old continent; Acoſta extols the civil government of the Mexicans above many republics of Europe. M. de Paw finds, in the moral and political conduct of the Americans, nothing but barbarity, extravagance,

America. travagance, and brutality; and Acoſta finds there, laws that are admirable, and worthy of being preſerved for ever.

55 M de Paw's proofs of American cowardice.

M de Paw denies them courage, and alleges the conqueſt of Mexico as a proof of their cowardice. "Cortes (he ſays) conquered the empire of Mexico with 450 vagabonds and 15 horſes, badly armed; his miſerable artillery conſiſted of ſix falconets, which would not at the preſent day be capable of exciting the fears of a fortreſs defended by invalids. During his abſence the capital was held in awe by the half of his troops. What men! what events!—It is confirmed by the depoſitions of all hiſtorians, that the Spaniards entered the firſt time into Mexico without making one ſingle diſcharge of their artillery. If the title of hero is applicable to him who has the diſgrace to occaſion the death of a great number of rational animals, Ferdinand Cortes might pretend to it; otherwiſe, I do not ſee what true glory he has acquired by the overthrow of a tottering monarchy, which might have been deſtroyed in the ſame manner by any other aſſaſſin of our continent."

56 Refuted.

Theſe paſſages indicate either M. de Paw's ignorance of the hiſtory of the conqueſt of Mexico, or a wilful ſuppreſſion of what would openly contradict his ſyſtem; ſince all who have read that hiſtory know well, that the conqueſt of Mexico was not made with 450 men, but with more than 200,000. Cortes himſelf, to whom it was of more importance than to M. de Paw to make his bravery conſpicuous, and his conqueſt appear glorious, confeſſes the exceſſive number of the allies who were under his command at the ſiege of the capital, and combated with more fury againſt the Mexicans than the Spaniards themſelves. According to the account which Cortes gave to the emperor Charles V. the ſiege of Mexico began with 87 horſes, 848 Spaniſh infantry, armed with guns, croſs-bows, ſwords, and lances, and upwards of 75,000 allies, of Tlaſcala, Huexotzinco, Cholula, and Chalco, equipped with various ſorts of arms; with three large pieces of iron cannon, 15 ſmall of copper, and 13 brigantines. In the courſe of the ſiege were aſſembled the numerous nations of the Otomies, the Cohuixcas, and Matlazincas, and the troops of the populous cities of the lakes; ſo that the army of the beſiegers not only exceeded 200,000, but amounted to 4,000,000, according to the letter from Cortes; and beſides theſe, 3000 boats and canoes came to their aſſiſtance. Did it betray cowardice to have ſuſtained, for full 75 days, the ſiege of an open city, engaging daily with an army ſo large, and in part provided with arms ſo inferior, and at the ſame time having to withſtand the ravages of famine? Can they merit the charge of cowardice, who, after having loſt ſeven of the eight parts of their city, and about 50,000 citizens, part cut off by the ſword, part by famine and ſickneſs, continued to defend themſelves until they were furiouſly aſſaulted in the laſt hold which was left them? See the article MEXICO. America.

57 Remarkable inſtances of calumny in M. de Paw.

According to M. de Paw, "the Americans at firſt were not believed to be men, but rather ſatyrs, or large apes, which might be murdered without remorſe or reproach. At laſt, in order to add inſult to the oppreſſion of thoſe times, a pope made an original bull, in which he declared, that being deſirous of founding biſhoprics in the richeſt countries of America, it pleaſed him and the Holy Spirit to acknowledge the Americans to be true men: in ſo far, that without this deciſion of an Italian, the inhabitants of the new world would have appeared, even at this day, to the eyes of the faithful, a race of equivocal men. There is no example of ſuch a deciſion ſince this globe has been inhabited by men and apes." Upon this paſſage the abbé animadverts, as being a ſingular inſtance of calumny and miſrepreſentation; and gives the following hiſtory of the deciſion alluded to.

58 Occaſion of the famous bull of Paul III.

"Some of the firſt Europeans who eſtabliſhed themſelves in America, not leſs powerful than avaricious, deſirous of enriching themſelves to the detriment of the Americans, kept them continually employed, and made uſe of them as ſlaves; and in order to avoid the reproaches which were made them by the biſhops and miſſionaries who inculcated humanity, and the giving liberty to thoſe people to get themſelves inſtructed in religion, that they might do their duties towards the church and their families, alleged, that the Indians were by nature ſlaves, and incapable of being inſtructed; and many other falſehoods of which the chronicler Herrera makes mention againſt them. Thoſe zealous eccleſiaſtics being unable, either by their authority or preaching, to free thoſe unhappy converts from the tyranny of ſuch miſers, had recourſe to their Catholic majeſties, and at laſt obtained from their juſtice and clemency thoſe laws, as favourable to the Americans as honourable to the court of Spain, that compoſe the Indian code, which were chiefly due to the indefatigable zeal of the biſhop de las Caſas. On another ſide, Garces biſhop of Tlaſcala, knowing that thoſe Spaniards bore, notwithſtanding their perverſity, a great reſpect to the deciſions of the vicar of Jeſus Chriſt, made application in the year 1586 to Pope Paul III. by that famous letter of which we have made mention; repreſenting to him the evils which the Indians ſuffered from the wicked Chriſtians, and praying him to interpoſe his authority in their behalf. The pope, moved by ſuch heavy remonſtrances, deſpatched the next year the original bull, a faithful copy of which we have here ſubjoined (A), which was not made, as is manifeſt, to declare the

(A) Paulus papa III. univerſis Chriſti Fidelibus preſentes Literas inſpecturis Salutem et Apoſtolicam Benedictionem.—"Veritas ipſa, quæ nec fallit nec fallere poteſt, cùm Prædicatores Fidei ad officium prædicationis aſſumat, dixit dignoſcitur: *Euntes docete omnes gentes*: omnes, dixit, abſque omni delectu, cum omnes Fidei ſint prorſus capaces exiſtant. Quod videns et invidens ipſius humani generis æmulus, qui bonis operibus, ut pereant, ſemper adverſatur, modum excogitavit hactenus inauditum, quo impediret, ne Verbum Dei Gentibus, ut ſalvæ fierent, prædicaretur: ut quoſdam ſuos fatellites commovit, qui ſuam cupiditatem adimplere cupientes, Occidentales et Meridionales Indos, et alias Gentes, quæ temporibus iſtis ad noſtram notitiam pervenerunt, ſub prætextu quod Fidei Catholicæ expertes exiſtant, uti bruta animalia, ad noſtra obſequia redigendos eſſe, paſſim afferre præſumant, et eos in ſervitutem redigunt, tantis afflictionibus illos urgentes, quantis vix bruta animalia illis

America. the Americans true men; for ſuch a piece of weakneſs was very diſtant from that or any other pope: but ſolely to ſupport the natural rights of the Americans againſt the attempts of their oppreſſors, and to condemn the injuſtice and inhumanity of thoſe, who, under the pretence of ſuppoſing theſe people idolatrous, or incapable of being inſtructed, took from them their property and their liberty, and treated them as ſlaves and beaſts."

59 Repreſentation of Columbus. If at firſt the Americans were deemed ſatyrs, nobody can better prove it than Chriſtopher Columbus, their diſcoverer. Let us hear, therefore, how that celebrated admiral ſpeaks, in his account to the Catholic ſovereigns Ferdinand and Iſabella, of the firſt ſatyrs he ſaw in the iſland of Hayti or Hiſpaniola. "I ſwear (he ſays), to your majeſties, that there is not a better people in the world than theſe, more affectionate, affable, or mild. They love their neighbours as themſelves: their language is the ſweeteſt, the ſofteſt, and the moſt cheerful; for they always ſpeak ſmiling; and although they go naked, let your majeſties believe me, their cuſtoms are very becoming; and their king, who is ſerved with great majeſty, has ſuch engaging manners, that it gives great pleaſure to ſee him, and alſo to conſider the retentive faculty of that people, and their deſire of knowledge, which incites them to aſk the cauſes and the effects of things."

60 Concluſions concerning the capacities of the Americans "We have had intimate commerce with the Americans (continues the abbé); have lived for ſome years in a ſeminary deſtined for their inſtruction; ſaw the erection and progreſs of the royal college of Guadaloupe, founded in Mexico by a Mexican Jeſuit, for the education of Indian children; had afterwards ſome Indians among our pupils; had particular knowledge of many American rectors, many nobles, and numerous artiſts; attentively obſerved their character, their genius, their diſpoſition, and manner of thinking; and having examined beſides, with the utmoſt diligence, their ancient hiſtory, their religion, their government, their laws, and their cuſtoms: After ſuch long experience and ſtudy of them, from which we imagine ourſelves enabled to decide without danger of erring, we declare to M. de Paw, and to all Europe, that the mental qualities of the Americans are not in the leaſt inferior to thoſe of the Europeans; that they are capable of all, even the moſt abſtract ſciences; and that, if equal care was taken of their education, if they were brought up from childhood in ſeminaries under good maſters, were protected and ſtimulated by rewards, we ſhould ſee riſe among the Americans, philoſophers, mathematicians, and divines, who would rival the firſt in Europe."

But although we ſhould ſuppoſe, that, in the torrid climates of the new world, as well as in thoſe of the old, eſpecially under the additional depreſſion of ſlavery, there was an inferiority of the mental powers, the Chineſe and the North Americans have diſcovered higher elated rudiments of human excellence and ingenuity than have ever been known among tribes in a ſimilar ſtate of ſociety in any part of the world. America. 61 Examples of Chineſe and North Americans.

M. de Paw aſſirms, that the Americans were unacquainted with the uſe of money, and quotes the following well-known paſſage from Montesquieu: "Imagine to yourſelf, that, by ſome accident, you are placed in an unknown country; if you find money there, do not doubt that you are arrived among a poliſhed people." But if by money we are to underſtand a piece of metal with the ſtamp of the prince or the public, the want of it in a nation is no token of barbarity. The Athenians employed oxen for money, as the Romans did ſheep. The Romans had no coined money till the time of Servius Tullius, nor the Perſians until the reign of Darius Hyſtaſpes. But if by money is underſtood a ſign repreſenting the value of merchandiſe, the Mexicans, and other nations of Anahuac, employed money in their commerce. The cacao, of which they made conſtant uſe in the market to purchaſe whatever they wanted, was employed for this purpoſe, as ſalt is in Abyſſinia.

It has been affirmed that ſtone bridges were unknown in America when it was firſt diſcovered; and that the natives did not know how to form arches. But theſe aſſertions are erroneous. The remains of the ancient palaces of Tezcuco, and ſtill more their vapour baths, ſhow the ancient uſe of arches and vaults among the Mexicans. But the ignorance of this art would have been no proof of barbarity. Neither the Egyptians nor Babylonians underſtood the conſtruction of arches.

M. de Paw affirms, that the palace of Montezuma was nothing elſe than a hut. But it is certain, from the affirmation of all the hiſtorians of Mexico, that the army under Cortes, conſiſting of 6400 men, was all lodged in the palace; and there remained ſtill ſufficient room for Montezuma and his attendants.

62 Tokens of ſcience. The advances which the Mexicans had made in the ſtudy of aſtronomy is perhaps the moſt ſurpriſing proof of their attention and ſagacity; for it appears from Abbé Clavigero's hiſtory, that they not only counted 365 days to the year, but alſo knew of the exceſs of about ſix hours in the ſolar over the civil year, and remedied the difference by means of intercalary days.

Of American morality, the following exhortation of

illis ſervientia urgeant. Nos igitur, qui ejuſdem Domini noſtri vices, licet indigni, gerimus in terris, et Oves gregis ſui nobis commiſſas, quæ extra ejus Ovile ſunt, ad ipſum Ovile toto nixu exquirimus, attendentes Indos ipſos, utpote veros homines, non ſolum Chriſtianæ Fidei capaces exiſtere, ſed, ut nobis innotuit, ad Fidem ipſam promptiſſime currere, ac volentes ſuper his congruis remediis providere, prædictos Indos et omnes alias gentes ad notitiam Chriſtianorum in poſterum deventuras, licet extra fidem Chriſti exiſtant, ſua libertate et dominio hujuſmodi uti, et potiri, et gaudere libere, et licite poſſe, nec in ſervitutem redigi debere, ac quicquid ſecus fieri contigerit irritum et inane, ipſoſque Indos, et alias Gentes Verbi Dei prædicatione, et exemplo bonæ vitæ, ad dictam Fidem Chriſti invitandos fore. Auctoritate Apoſtolica per præſentes literas decernimus, et declaramus, non obſtantibus premiſſis, cæteriſque contrariis quibuſcunque." Datum Romæ anno 1537. IV. Non. Jun. Pontificatus noſtri anno III

Queſta, è non altra è quella famoſa bolla, per la quale s' è fatto un ſi grande ſchiamazzo.

America. a Mexican to his son may serve as a specimen. "My son, who art come into the light from the womb of thy mother like a chicken from the egg, and like it art preparing to fly through the world, we know not how long Heaven will grant to us the enjoyment of that precious good which we possess in thee; but however short the period, endeavour to live exactly, praying God continually to assist thee. He created thee: thou art his property. He is thy father, and loves thee still more than I do: repose in him thy thoughts, and day and night direct thy sighs to him. Reverence and salute thy elders, and hold no one in contempt. To the poor and distressed be not dumb, but rather use words of comfort. Honour all persons, particularly thy parents, to whom thou owest obedience, respect, and service. Guard against imitating the example of those wicked sons, who, like brutes that are deprived of reason, neither reverence their parents, listen to their instruction, nor submit to their correction: because whoever follows their steps will have an unhappy end, will die in a desperate or sudden manner, or will be killed and devoured by wild beasts.

63 Specimen of their morality.

"Mock not, my son, the aged or the imperfect. Scorn not him whom you see fall into some folly or transgression, nor make him reproaches; but restrain thyself, and beware lest thou fall into the same error which offends thee in another. Go not where thou art not called, nor interfere in that which does not concern thee. Endeavour to manifest thy good breeding in all thy words and actions. In conversation, do not lay thy hands upon another, nor speak too much, nor interrupt or disturb another's discourse. When any one discourses with thee, hear him attentively, and hold thyself in an easy attitude, neither playing with thy feet, nor putting thy mantle to thy mouth, nor spitting too often, nor looking about you here and there, nor rising up frequently, if thou art sitting; for such actions are indications of levity and low breeding."—He proceeds to mention several particular vices which are to be avoided, and concludes,—"Steal not, nor give thyself to gaming; otherwise thou wilt be a disgrace to thy parents, whom thou oughtest rather to honour for the education they have given thee. If thou wilt be virtuous, thy example will put the wicked to shame. No more, my son; enough hath been said in discharge of the duties of a father. With these counsels I wish to fortify thy mind. Refuse them not, nor act in contradiction to them; for on them thy life and all thy happiness depend."

64 Notions of M. de Buffon concerning the degeneracy of animal nature in America.

As ranging on the same side with the abbé Clavigero, the ingenious Mr Jefferson deserves particular attention. This gentleman, in his Notes on the State of Virginia, &c. has taken occasion to combat the opinions of Buffon; and seems to have fully refuted them both by argument and facts. The French philosopher asserts, "That living nature is less active, less energetic, in the new world, than in the old." He affirms, 1. That the animals common to both continents are smaller in America. 2 That those peculiar to the new are on an inferior scale. 3. That those which have been domesticated in both have degenerated in America. And, 4. That it exhibits fewer species of living creatures. The cause of this he ascribes to the diminution of heat in America, and to the prevalence of humidity from the extension of its lakes and waters over a prodigious surface. In other words, he affirms, that *heat* is friendly and *moisture* adverse to the production and development of the larger quadrupeds. America. a. 65

The hypothesis, that moisture is unfriendly to animal growth, Mr Jefferson shows to be contradicted by observation and experience. It is by the assistance of heat and moisture that vegetables are elaborated from the elements. Accordingly we find, that the more humid climates produce plants in greater profusion than the dry. Vegetables are immediately or remotely the food of every animal; and, from the uniform operation of Nature's laws we discern, that, in proportion to the quantity of food, animals are not only multiplied in their numbers, but improved in their size. Of this last opinion is the count de Buffon himself, in another part of his work: "En general, il paroit que les pays un peu *froids* conviennent mieux à nos bœufs que les pays chauds, et qu'ils sont d'autant plus gros et plus grands que le climat en plus *humide* et plus abondans en paturages. Les bœufs de Danemarc, de la Podolie, de l'Ukraine, et de la Tartarie qu'habitent les Calmouques, sont les plus grands de tous." Here, then, a race of animals, and one of the largest too, has been increased in its dimensions by cold and moisture, in direct opposition to the hypothesis, which supposes that these two circumstances diminish animal bulk, and that it is their contraries, heat and dryness, which enlarge it. But to try the question on more general ground, let us take two portions of the earth, Europe and America for instance, sufficiently extensive to give operation to general causes; let us consider the circumstances peculiar to each, and observe their effect on animal nature. America, running through the torrid as well as temperate zone, has more heat collectively taken, than Europe. But Europe, according to our hypothesis, is the driest. They are equally adapted then to animal production; each being endowed with one of those causes which befriend animal growth, and with one which opposes it. Let us, then, take a comparative view of the quadrupeds of Europe and America, presenting them to the eye in three different tables; in one of which shall be enumerated those found in both countries; in a second, those found in one only; in a third, those which have been domesticated in both. To facilitate the comparison, let those of each table be arranged in gradation, according to their sizes, from the greatest to the smallest, so far as their sizes can be conjectured. The weights of the large animals shall be expressed in the English avoirdupois pound and its decimals; those of the smaller in the ounce and its decimals. Those which are marked thus *, are actual weights of particular subjects, deemed among the largest of their species. Those marked thus †, are furnished by judicious persons, well acquainted with the species, and saying, from conjecture only, what the largest individual they had seen would probably have weighed. The other weights are taken from Messrs Buffon and D'Aubenton, and are of such subjects as came casually to their hands for dissection. The hypothesis, that moisture is unfriendly to animal growth, considered. 66 The contrary maintained by Mr Jefferson.

Comparative

America.

Comparative View of the Quadrupeds of Europe and of America.

TABLE I. *Aboriginals of both.*

	Europe.	America.
	lb.	lb.
Mammoth		
Buffalo. Biſon		*1800
White bear. Ours blanc		
Caribou. Renne		
Bear. Ours	153.7	*410
Elk. Elan. Original, palmated		
Red deer. Cerf	288 8	*273
Fallow deer. Daim	165.8	
Wolf. Loup	69.8	
Roe. Chevreuil	56.7	
Glutton. Glouton. Carcajou		
Wild cat. Chat ſauvage		†30
Lynx. Loup cervier	25.	
Beaver. Caſtor	18 5	*45
Badger. Blaireau	13.6	
Red fox. Renard	13.5	
Grey fox. Iſatis		
Otter. Loutre	8.9	†12
Monax. Marmotte	6.5	
Viſon. Fouine	2.8	
Hedgehog. Heriſſon	2.2	
Martin. Marte	1.9	†6
	oz.	
Water rat. Rat d'eau	7.5	
Weaſel. Belette	2.2	oz.
Flying ſquirrel. Polatouche	2.2	†4
Shrew mouſe. Muſaraigne	1.	

TABLE II. *Aboriginals of one only.*

EUROPE.		AMERICA.	
	lb.		lb.
Sanglier. Wild boar	280.	Tapir	534.
Mouflon. Wild ſheep	56.	Elk, round-horned	†450.
Bouquetin. Wild goat		Puma	
Lievre. Hare	7.6	Jaguar	218.
Lapin. Rabbit	3.4	Cabiai	109.
Putois. Polecat	3.3	Tamanoir	109.
Genette	3.1	Tamandua	65.4
Deſman. Muſk rat	oz.	Cougar of N. Amer.	75.
Ecureuil. Squirrel	12.	Cougar of S. Amer.	59.4
Hermine. Ermine	8.2	Ocelot	
Rat. Rat	7.5	Pecari	46.3
Loirs	3.1	Jaguaret	43.6
Lerot. Dormouſe	1.8	Alco	
Toupe. Mole	1.2	Lama	
Hamſter	.9	Paco	
Ziſel		Paca	32.7
Leming		Serval	
Souris. Mouſe		Sloth. Unau	27¼
		Saricovienne	
		Kincajou	
		Tatou Kabaſſou	21.8
		Urſon. Urchin	

TABLE II. *continued.*

America.

EUROPE.	AMERICA.	
		lb.
	Raccoon. Raton	16.5
	Coati	
	Coendou	16.3
	Sloth. Aï	13.
	Sapajou Ouarini	
	Sapajou Coaita	9.8
	Tatou Encubert	
	Tatou Apar	
	Tatou Cachica	7.
	Little Coendou	6.5
	Opoſſum. Sarigue	
	Tapeti	
	Margay	
	Crabier	
	Agouti	4.2
	Sapajou Saï	3.5
	Tatou Cirquinçon	
	Tatou Tatouate	3 3
	Mouffette Squaſh	
	Mouffette Chiche	
	Mouffette Conepate. Scunk	
	Mouffette. Zorilla	
	Whabus. Hare. Rabbit	
	Aperea	
	Akouchi	
	Ondatra. Muſk rat	
	Pilori	
	Great gray ſquirrel	†2.7
	Fox ſquirrel of Virginia	†2.625
	Surikate	2.
	Mink	†2.
	Sapajou. Sajou	1.8
	Indian pig. Cochon d'Inde	1.6
	Sapajou. Saimiri	1.5
	Phalanger	
	Coquallin	
	Leſſer gray ſquirrel	†1.5
	Black ſquirrel	†1.5
	Red ſquirrel	10. oz.
	Sagoin Saki	
	Sagoin Pinche	
	Sagoin Tamarin	oz.
	Sagoin Ouiſtiti	4.4
	Sagoin Marikine	
	Sagoin Mico	
	Cayopollin	
	Fourmillier	
	Marmoſe	
	Sarigue of Cayenne	
	Tucan	
	Red mole	oz.
	Ground ſquirrel	4.

America.

TABLE III. *Domeſticated in both.*

	Europe.	America.
	lb.	lb.
Cow	763.	*2500
Horſe		*1366
Aſs		
Hog		*1200
Sheep		*125
Goat		*80
Dog	67.6	
Cat	7.	

67 Reſult of the firſt table.

The reſult of this view is, that of 26 quadrupeds common to both countries, ſeven are ſaid to be larger in America, ſeven of equal ſize, and 12 not ſufficiently examined. So that the firſt table impeaches the firſt member of the aſſertion, that of the animals common to both countries the American are ſmalleſt, "Et cela ſans aucune exception." It ſhows it not juſt in all the latitude in which its author has advanced it, and probably not to ſuch a degree as to found a diſtinction between the two countries.

68 Explanation and reſult of the ſecond table.

Proceeding to the ſecond table, which arranges the animals found in one of the two countries only, M. de Buffon obſerves, that the tapir, the elephant of America, is but of the ſize of a ſmall cow. To preſerve our compariſon, Mr Jefferſon ſtates the wild boar, the elephant of Europe, as little more than half that ſize. He has made an elk with round or cylindrical horns an animal of America, and peculiar to it; becauſe he has ſeen many of them himſelf, and more of their horns; and becauſe, from the beſt information, it is certain that in Virginia this kind of elk has abounded much, and ſtill exiſts in ſmaller numbers. He makes the American hare or rabbit peculiar, believing it to be different from both the European animals of theſe denominations, and calling it therefore by its Algonquin name *whabus*, to keep it diſtinct from theſe. Kalm is of the ſame opinion. The ſquirrels are denominated from a knowledge derived from daily ſight of them, becauſe with that the European appellations and deſcriptions ſeem irreconcilable. Theſe are the only inſtances in which Mr Jefferſon departs from the authority of M. de Buffon in the conſtruction of this table; whom he takes for his groundwork, becauſe he thinks him the beſt informed of any naturaliſt who has ever written. The reſult is, that there are 18 quadrupeds peculiar to Europe; more than four times as many, to wit, 74 peculiar to America; that the firſt of theſe 74, the tapir, the largeſt of the animals peculiar to America, weighs more than the whole column of Europeans; and conſequently this ſecond table diſproves the ſecond member of the aſſertion, that the animals peculiar to the new world are on a ſmaller ſcale, ſo far as that aſſertion relied on European animals for ſupport: and it is in full oppoſition to the theory which makes the animal volume to depend on the circumſtances of heat and moiſture.

69 Of the third table.

The third table comprehends thoſe quadrupeds only which are domeſtic in both countries. That ſome of theſe, in ſome parts of America, have become leſs than their original ſtock, is doubtleſs true; and the reaſon is very obvious. In a thinly peopled country, the ſpontaneous productions of the foreſts and waſte fields are ſufficient to ſupport indifferently the domeſtic animals of the farmer, with a very little aid from him in the ſevereſt and ſcarceſt ſeaſon. He therefore finds it more convenient to receive them from the hand of Nature in that indifferent ſtate, than to keep up their ſize by a care and nouriſhment which would coſt him much labour. If, on this low fare, theſe animals dwindle, it is no more than they do in thoſe parts of Europe where the poverty of the ſoil, or poverty of the owner, reduces them to the ſame ſubſiſtence. It is the uniform effect of one and the ſame cauſe, whether acting on this or that ſide of the globe. It would be erring, therefore, againſt that rule of philoſophy, which teaches us to aſcribe like effects to like cauſes, ſhould we impute this diminution of ſize in America to any imbecility or want of uniformity in the operations of nature. It may be affirmed with truth, that in thoſe countries, and with thoſe individuals of America, where neceſſity or curioſity has produced equal attention as in Europe to the nouriſhment of animals, the horſes, cattle, ſheep, and hogs, of the one continent, are as large as thoſe of the other. There are particular inſtances, well atteſted, where individuals of America have imported good breeders from England, and have improved their ſize by care in the courſe of ſome years. And the weights actually known and ſtated in the third table, will ſuffice to ſhow, that we may conclude, on probable grounds, that, with equal food and care, the climate of America will preſerve the races of domeſtic animals as large as the European ſtock from which they are derived; and conſequently that the third member of M. de Buffon's aſſertion, that the domeſtic animals are ſubject to degeneration from the climate of America, is as probably wrong as the firſt and ſecond were certainly ſo.

That the laſt part of it is erroneous, which affirms, that the ſpecies of American quadrupeds are comparatively few, is evident from the tables taken all together; to which may be added the proof adduced by the abbé Clavigero. According to Buffon's lateſt calculation, in his *Epoques de la Nature*, there are 300 ſpecies of quadrupeds; and America, though it does not make more than a third part of the globe, contains, according to Clavigero, almoſt one half of the different ſpecies of its animals.

70 The human inhabitants comprehended in the ſame hypotheſis of degeneracy.

Of the human inhabitants of America, to whom the ſame hypotheſis of degeneracy is extended, M. Buffon gives the following deſcription: "Though the American ſavage be nearly of the ſame ſtature with men in poliſhed ſocieties; yet this is not a ſufficient exception to the general contraction of animated nature throughout the whole continent. In the ſavage, the organs of generation are ſmall and feeble. He has no hair, no beard, no ardour for the female. Though nimbler than the European, becauſe more accuſtomed to running, his ſtrength is not ſo great. His ſenſations are leſs acute; and yet he is more timid and cowardly. He has no vivacity, no activity of mind. The activity of his body is not ſo much an exerciſe or ſpontaneous motion, as a neceſſary action produced by want. Deſtroy his appetite for victuals and drink, and you will at once annihilate the active principle of all his movements: He remains in ſtupid repoſe, on his limbs or couch, for whole days. It is eaſy to diſcover the cauſe of the

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scattered life of savages, and of their estrangement from society. They have been refused the most precious sparks of Nature's fire: They have no ardour for women, and, of course, no love to mankind. Unacquainted with the most lively and most tender of all attachments, their other sensations of this nature are cold and languid. Their love to parents and children is extremely weak. The bonds of the most intimate of all societies, that of the same family, are feeble; and one family has no attachment to another. Hence no union, no republic, no social state, can take place among them. The physical cause of love gives rise to the morality of their manners. Their heart is frozen, their society cold, and their empire cruel. They regard their females as servants destined to labour, or as beasts of burden, whom they load unmercifully with the produce of their hunting, and oblige, without pity or gratitude to perform labours which often exceed their strength. They have few children, and pay little attention to them. Every thing must be referred to the first cause: They are indifferent, because they are weak; and this indifference to the sex is the original stain which disgraces Nature, prevents her from expanding, and, by destroying the germs of life, cuts the root of society. Hence man makes no exception to what has been advanced. Nature, by denying him the faculty of love, has abased and contracted him more than any other animal."

71 Observations by Mr Jefferson.

A humiliating picture indeed! but than which, Mr Jefferson assures us, never one was more unlike the original. M. Buffon grants, that their stature is the same as that of the men of Europe; and he might have admitted, that the Iroquois were larger, and the Lenopi or Delawares taller, than people in Europe generally are: But he says their organs of generation are smaller and weaker than those of Europeans; which is not a fact. And as to their want of beard, this error has been already noticed (N° 49. *supra*.)

72 Seeming coldness of the Americans to the sex accounted for.

"They have no ardour for their females." It is true, they do not indulge those excesses, nor discover that fondness, which are customary in Europe; but this is not owing to a defect in nature, but to manners. Their soul is wholly bent upon war. This is what procures them glory among the men, and makes them the admiration of the women. To this they are educated from their earliest youth. When they pursue game with ardour, when they bear the fatigues of the chase, when they sustain and suffer patiently hunger and cold, it is not so much for the sake of the game they pursue, as to convince their parents and the council of the nation, that they are fit to be enrolled in the number of the warriors. The songs of the women, the dance of the warriors, the sage counsel of the chiefs, the tales of the old, the triumphant entry of the warriors returning with success from battle, and the respect paid to those who distinguish themselves in battle, and in subduing their enemies; in short, every thing they see or hear tends to inspire them with an ardent desire for military fame. If a young man were to discover a fondness for women before he has been to war, he would become the contempt of the men, and the scorn and ridicule of the women: or were he to indulge himself with a captive taken in war, and much more were he to offer violence in order to gratify his lust, he would incur indelible disgrace. The seeming frigidity of the men, therefore, is the effect of manners, and not a defect of nature. They are neither more defective in ardour, nor more impotent with the female, than are the whites reduced to the same diet and exercise.

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73 Why they raise few children.

"They raise few children."—They indeed raise fewer children than we do; the causes of which are to be found, not in a difference of nature, but of circumstance. The women very frequently attending the men in their parties of war and of hunting, childbearing becomes extremely inconvenient to them. It is said, therefore, that they have learned the practice of procuring abortion by the use of some vegetable; and that it even extends to prevent conception for a considerable time after. During these parties they are exposed to numerous hazards, to excessive exertions, to the greatest extremities of hunger. Even at their homes, the nation depends for food, through a certain part of every year, on the gleanings of the forest; that is, they experience a famine once in every year. With all animals, if the female be badly fed, or not fed at all, her young perish; and if both male and female be reduced to like want, generation becomes less active, less productive. To the obstacles, then, of want and hazard, which Nature has opposed to the multiplication of wild animals, for the purpose of restraining their numbers within certain bounds, those of labour and of voluntary abortion are added with the Indian. No wonder, then, if they multiply less than we do. Where food is regularly supplied, a single farm will show more of cattle than a whole country of forests can of buffaloes. The same Indian women, when married to white traders, who feed them and their children plentifully and regularly, who exempt them from excessive drudgery, who keep them stationary and unexposed to accident, produce and raise as many children as the white women. Instances are known, under these circumstances, of their rearing a dozen children.

74 Of their sensibility, &c.

Neither do they seem to be "deficient in natural affection." On the contrary their sensibility is keen, even the warriors weeping most bitterly on the loss of their children; though, in general, they endeavour to appear superior to human events.

Their friendships are strong, and faithful to the uttermost extremity. A remarkable instance of this appeared in the case of the late Col. Byrd, who was sent to the Cherokee nation to transact some business with them. It happened that some of our disorderly people had just killed one or two of that nation. It was therefore proposed in the council of the Cherokees, that Col. Byrd should be put to death, in revenge for the loss of their countrymen. Among them was a chief, called *Silouee*, who, on some former occasion, had contracted an acquaintance and friendship with Col. Byrd. He came to him every night in his tent, and told him not to be afraid, they should not kill him. After many days deliberation, however, the determination was, contrary to Silouee's expectation, that Byrd should be put to death; and some warriors were despatched as executioners. Silouee attended them; and when they entered the tent, he threw himself between them and Byrd, and said to the warriors, "This man is my friend: before you get at him, you must kill

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kill me." On which they returned; and the council reſpected the principle ſo much as to recede from their determination.

That "they are timorous and cowardly," is a character with which there is little reaſon to charge them, when we recollect the manner in which the Iroquois met Monſ.———, who marched into their country; in which the old men, who ſcorned to fly, or to ſurvive the capture of their town, braved death like the old Romans in the time of the Gauls, and in which they ſoon after revenged themſelves by ſacking and deſtroying Montreal. In ſhort, the Indian is brave, when an enterpriſe depends on bravery; education with him making the point of honour conſiſt in the deſtruction of an enemy by ſtratagem, and in the preſervation of his own perſon free from injury: or perhaps this is nature, while it is education that teaches us to honour force more than fineſſe. He will defend himſelf againſt an hoſt of enemies, always chooſing to be killed rather than to ſurrender, though it be to the whites, who he knows will treat him well. In ſome ſituations alſo, he meets death with more deliberation, and endures tortures with a firmneſs unknown almoſt to religious enthuſiaſm among us.

75 Of their courage. (See alſo Nos 54, 55 *Supra.*)

Much leſs are they to be characterized as a people of no vivacity, and who are excited to action or motion only by the calls of hunger and thirſt. Their dances, in which they ſo much delight, and which to a European would be the moſt ſevere exerciſe, fully contradict this; not to mention their fatiguing marches, and the toil they voluntarily and cheerfully undergo in their military expeditions. It is true, that when at home they do not employ themſelves in labour or the culture of the ſoil: but this again is the effect of cuſtoms and manners, which have aſſigned that to the province of the women. But it is ſaid, "they are averſe to ſociety and a ſocial life." Can any thing be more inapplicable than this to people who always live in towns or in clans? Or can they be ſaid to have no *republique*, who conduct all their affairs in national councils; who pride themſelves in their national character; who conſider an inſult or injury done to an individual by a ſtranger as done to the whole, and reſent it accordingly?

To form a juſt eſtimate of their genius and mental powers, Mr Jefferſon obſerves, more facts are wanting; and great allowance is to be made for thoſe circumſtances of their ſituation which call for a diſplay of particular talents only. This done, we ſhall probably find that the Americans are formed, in mind as well as in body, on the ſame model with the *homo ſapiens Europæus*. The principles of their ſociety forbidding all compulſion, they are to be led to duty and to enterpriſe by perſonal influence and perſuaſion. Hence eloquence in council, bravery and addreſs in war, become the foundations of all conſequence with them. To theſe acquirements all their faculties are directed. Of their bravery and addreſs in war we have multiplied proofs, becauſe we have been the ſubjects on which they were exerciſed. Of their eminence in oratory we have fewer examples, becauſe it is diſplayed chiefly in their own councils. Some, however, we have of very ſuperior luſtre. We may challenge the whole orations of Demoſthenes and Cicero, and of any more eminent orator, if Europe has furniſhed more eminent, to produce a ſingle paſſage ſuperior to the ſpeech of Logan, a Mingo chief, to Lord Dunmore when governor of this ſtate. The ſtory is as follows; of which, and of the ſpeech, the authenticity is unqueſtionable. In the ſpring of the year 1774, a robbery and murder were committed on an inhabitant of the frontiers of Virginia by two Indians of the Shawanee tribe. The neighbouring whites, according to their cuſtom, undertook to puniſh this outrage in a ſummary way. Colonel Creſap, a man infamous for the many murders he had committed on thoſe much injured people, collected a party, and proceeded down the Kanhaway in queſt of vengeance. Unfortunately a canoe of women and children, with one man only, was ſeen coming from the oppoſite ſhore, unarmed, and, unſuſpecting any hoſtile attack from the whites. Creſap and his party concealed themſelves on the bank of the river; and the moment the canoe reached the ſhore, fingled out their objects, and at one fire killed every perſon in it. This happened to be the family of Logan, who had long been diſtinguiſhed as a friend of the whites. This unworthy return provoked his vengeance. He accordingly ſignalized himſelf in the war which enſued. In the autumn of the ſame year, a deciſive battle was fought at the mouth of the Great Kanhaway, between the collected forces of the Shawanees, Mingoes, and Delawares, and a detachment of the Virginian militia. The Indians were defeated, and ſued for peace; Logan, however, diſdained to be ſeen among the ſuppliants: but, leſt the ſincerity of a treaty ſhould be diſtruſted, from which ſo diſtinguiſhed a chief abſented himſelf, he ſent by a meſſenger the following ſpeech, to be delivered to Lord Dunmore:—"I appeal to any white man to ſay if ever he entered Logan's cabin hungry, and he gave him not meat: if ever he came cold and naked, and he clothed him not. During the courſe of the laſt long and bloody war, Logan remained idle in his cabin, an advocate for peace. Such was my love for the whites, that my countrymen pointed as they paſſed, and ſaid, *Logan is the friend of white men.* I had even thought to have lived with you, but for the injuries of one man. Colonel Creſap, the laſt ſpring, in cold blood, and unprovoked, murdered all the relations of Logan, not ſparing even my women and children. There runs not a drop of my blood in the veins of any living creature. This called on me for revenge. I have fought it; I have killed many; I have fully glutted my vengeance. For my country, I rejoice at the beams of peace; but do not harbour a thought that mine is the joy of fear. Logan never felt fear. He will not turn on his heel to ſave his life? Who is there to mourn for Logan? Not one."

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76 Story of Logan.

77 Specimen of Indian eloquence.

78 Other anecdotes.

To the preceding anecdotes, in favour of the American character, may be added the following by Dr Benjamin Franklin. The Indian men, when young, are hunters and warriors: when old, counſellors; for all their government is by the counſel or advice of the ſages. Hence they generally ſtudy oratory; the beſt ſpeaker having the moſt influence. The Indian women till the ground, dreſs the food, nurſe and bring up the children, and preſerve and hand down to poſterity the memory of public tranſactions. Theſe employments of men and women are accounted natural and honourable. Having few artificial wants, they have abundance of leiſure for improvement by converſation. Our laborious manner of life, compared with theirs, they eſteem

America. esteem slavish and base; and the learning on which we value ourselves, they regard as frivolous and useless.

Having frequent occasions to hold public councils, they have acquired great order and decency in conducting them. The old men sit in the foremost ranks, the warriors in the next, and the women and children in the hindmost. The business of the women is to take exact notice of what passes; imprint it in their memories, for they have no writing, and communicate it to their children. They are the records of the council, and they preserve tradition of the stipulations in treaties a hundred years back; which, when we compare with our writings, we always find exact. He that would speak rises. The rest observe a profound silence. When he has finished, and sits down, they leave him five or six minutes to recollect, that if he was omitted any thing he intended to say, or has any thing to add, he may rise again and deliver it. To interrupt another, even in common conversation, is reckoned highly indecent.

79 Politeness and civility of the American Indians.

The politeness of these savages in conversation is, indeed, carried to excess; since it does not permit them to contradict or deny the truth of what is asserted in their presence. By this means they indeed avoid disputes; but then it becomes difficult to know their minds, or what impression you make upon them. The missionaries who have attempted to convert them to Christianity, all complain of this as one of the greatest difficulties of their mission. The Indians hear with patience the truths of the gospel explained to them, and give their usual tokens of assent and approbation; but this by no means implies conviction; it is mere civility.

When any of them come into our towns, our people are apt to crowd round them, gaze upon them, and incommode them where they desire to be private; this they esteem great rudeness, and the effect of the want of instruction in the rules of civility and good manners. "We have (say they) as much curiosity as you; and when you come into our towns, we wish for opportunities of looking at you; but for this purpose we hide ourselves behind bushes where you are to pass, and never intrude ourselves into your company.

80 Their hospitality.

Their manner of entering one another's villages has likewise its rules. It is reckoned uncivil in travelling strangers to enter a village abruptly, without giving notice of their approach. Therefore, as soon as they arrive within hearing, they stop and holla, remaining there till invited to enter. Two old men usually come out to them and lead them in. There is in every village a vacant dwelling, called the *strangers house*. Here they are placed, while the old men go round from hut to hut, acquainting the inhabitants that strangers are arrived, who are probably hungry and weary; and every one sends them what he can spare of victuals, and skins to repose on. When the strangers are refreshed, pipes and tobacco are brought; and then, but not before, conversation begins, with inquiries who they are, whither bound, what news, &c. and it usually ends with offers of service, if the strangers have occasion for guides, or any necessaries for continuing their journey; and nothing is exacted for the entertainment.

The same hospitality, esteemed among them as a principal virtue, is practised by private persons of Am- which Conrad Weiser, the interpreter, and Dr Franklin the following instance: He had been adopted among the Six Nations, and spoke well the Mohawk language. In going through the Indian country to carry a message from our governor to the council at Onondaga, he called at the habitation of Canassetego, an old acquaintance, who embraced him, spread furs for him to sit on, placed before him some boiled beans and venison, and mixed some rum and water for his drink. When he was well refreshed, and had lit his pipe, Canassetego began to converse with him; asked how he had fared the many years since they had seen each other, whence he then came, what had occasioned the journey, &c. Conrad answered all his questions; and when the discourse began to flag, the Indian, to continue it, said, "Conrad, you have lived long among the white people, and known something of their customs; I have been sometimes at Albany, and have observed, that once in seven days they shut up their shops, and assemble all in the great house; tell me what it is for!—What do they do there?" "They meet there (says Conrad) to hear and learn *good things*." "I do not doubt (says the Indian) that they tell you so; they have told me the same: but I doubt the truth of what they say, and I will tell you my reasons. I went lately to Albany to sell my skins, and buy blankets, knives, powder, rum, &c. You know I generally used to deal with Hans Hanson; but I was a little inclined this time to try some other merchants. However, I called first upon Hans, and asked him what he would give for beaver. He said he could not give more than 4*s.* a-pound; but (says he) I cannot talk on business now; this is the day when we meet together to learn *good things*, and I am going to the meeting. So I thought to myself, since I cannot do any business to-day, I may as well go to the meeting too; and I went with him. —There stood up a man in black, and began to talk to the people very angrily. I did not understand what he said; but perceiving that he looked much at me and at Hanson, I imagined he was angry at seeing me there: so I went out, sat down near the house, struck fire, and lit my pipe, waiting till the meeting should break up. I thought too, that the man had mentioned something of beaver, and I suspected that it might be the subject of the meeting. So when they came out, I accosted my merchant.—Well Hans (says I), I hope you have agreed to give more than 4*s.* a-pound?" "No (says he), I cannot give so much, I cannot give more than 3*s.* 6*d.*" "I then spoke to several other dealers, but they all sung the same song, three and sixpence, three and sixpence. This made it clear to me that my suspicion was right; and that whatever they pretended of meeting to learn *good things*, the real purpose was, to consult how to cheat Indians in the price of beaver. Consider but a little, Conrad, and you must be of my opinion. If they met so often to learn *good things*, they certainly would have learned some before this time. But they are still ignorant. You know our practice. If a white man, in travelling through our country, enters one of our cabins, we all treat him as I treat you; we dry him if he is wet, we warm him if he is cold, and give him meat and drink, that he may allay his thirst and hunger; and we spread mats furs

America. furs for him to reſt and ſleep on: we demand nothing in return. But if I go into a white man's houſe at Albany, and aſk for victuals and drink, they ſay, Where is your money? And if I have none, they ſay, Get out, you Indian dog. You ſee they have not yet learned thoſe little *good things* that we need no meeting to be inſtructed in; becauſe our mothers taught them to us when we were children; and therefore it is impoſſible their meetings ſhould be, as they ſay, for any ſuch purpoſe, or have any ſuch effect; they are only to contrive *the cheating of Indians in the price of beaver.*"

THE next queſtion that occurs is, Whether the peculiarities of the Americans, or the diſparity between them and the inhabitants of Europe, affords ſufficient grounds for determining them, as ſome have done, to be a race of men radically different from all others?

In this queſtion, to avoid being tedious, we ſhall confine ourſelves to what has been advanced by Lord Kames; who is of opinion, that there are many different ſpecies of men, as well as of other animals; and gives a hypotheſis, whereby he pretends his opinion may be maintained in a conſiſtency with revelation. "If (ſays he) the only rule afforded by nature for claſſing animals can be depended on, there are different races of men as well as of dogs: a maſtiff differs not more from a ſpaniel, than a white man from a negro, or a Laplander from a Dane. And if we have any faith in Providence, it ought to be ſo. Plants were created of different kinds, to fit them for different climates; and ſo were brute animals. Certain it is, that all men are not fitted equally for every climate. There is ſcarce a climate but what is natural to ſome men, where they proſper and flouriſh: and there is not a climate but where ſome men degenerate. Doth not then analogy lead us to conclude, that, as there are different climates on the face of this globe, ſo there are different races of men fitted for theſe different climates?

Sr Lord Kames's arguments for different ſpecies.

"M. Buffon, from the rule, That animals which can procreate together, and whoſe progeny can alſo procreate, are of one ſpecies, concludes, that all men are of one race or ſpecies; and endeavours to ſupport that favourite opinion, by aſcribing to the climate, to food, or to other accidental cauſes, all the varieties that are found among men. But is he ſeriouſly of opinion that any operation of climate, or of other accidental cauſe, can account for the copper colour and ſmooth chin univerſal among the Americans; the prominence of the pudenda univerſal among the Hottentot women; or the black nipple no leſs univerſal among the female Samoiedes?—It is in vain to aſcribe to the climate the low ſtature of the Eſquimaux, the ſmallneſs of their feet, or the overgrown ſize of their heads. It is equally in vain to aſcribe to climate the low ſtature of the Laplanders, or their ugly viſage. The black colour of negroes, thick lips, flat noſe, criſped woolly hair, and rank ſmell, diſtinguiſh them from every other race of men. The Abyſſinians, on the contrary, are tall and well made, their complexion a brown olive, features well proportioned, eyes large and of a ſparkling black, thin lips, a noſe rather high than flat. There is no ſuch difference of climate between Abyſſinia and Negroland as to produce theſe ſtriking differences.

"Nor ſhall our author's ingenious hypotheſis concerning the extremities of heat and cold, parchale him impunity with reſpect to the ſallow complexion of the Samoiedes, Laplanders, and Greenlanders. The Finlanders, and northern Norwegians, live in a climate not leſs cold than that of the people mentioned; and yet are fair beyond other Europeans. I ſay more, there are many inſtances of races of people preſerving their original colour, in climates very different from their own; but not a ſingle inſtance of the contrary, as far as I can learn. There have been four complete generations of negroes in Pennſylvania, without any viſible change of colour; they continue jet black, as originally. Thoſe who aſcribe all to the ſun, ought to conſider how little probable it is, that the colour it impreſſes on the parents ſhould be communicated to their infant children, who never ſaw the ſun: I ſhould be as ſoon induced to believe with a German naturaliſt, whoſe name has eſcaped me, that the negro colour is owing to an ancient cuſtom in Africa, of dyeing the ſkin black. Let a European, for years, expoſe himſelf to the ſun in a hot climate, till he be quite brown; his children will nevertheleſs have the ſame complexion with thoſe in Europe. From the action of the ſun, is it poſſible to explain, why a negro, like a European, is born with a ruddy ſkin, which turns jet black the eighth or ninth day?" America.

Our author next proceeds to draw ſome arguments for the exiſtence of different races of men from the various tempers and diſpoſitions of different nations; which he reckons to be *ſpecific* differences, as well as thoſe of colour, ſtature, &c. and having ſummed up his evidence he concludes thus: "Upon ſumming up the whole particulars mentioned above, would one heſitate a moment to adopt the following opinion, were there no counterbalancing evidence, viz. 'That God created many pairs of the human race, differing from 'each other, both externally and internally; that he 'fitted thoſe pairs for different climates, and placed 'each pair in its proper climate; that the peculiari-'ties of the original pairs were preſerved entire in 'their deſcendants; who, having no aſſiſtance but their 'natural talents, were left to gather knowledge from 'experience: and, in particular, were left (each tribe) 'to form a language for itſelf; that ſigns were ſuffi-'cient for the original pairs, without any language 'but what nature ſuggeſts; and that a language was 'formed gradually as a tribe increaſed in numbers, 'and in different occupations, to make ſpeech neceſ-'ſary?'" But this opinion, however plauſible, we are not permitted to adopt; being taught a different leſſon by revelation, viz. That God created but a ſingle pair of the human ſpecies. Though we cannot doubt the authority of Moſes, yet his account of the creation of man is not a little puzzling, as it ſeems to contradict every one of the facts mentioned above. According to that account, different races of men were not formed, nor were men formed originally for different climates. All men muſt have ſpoken the ſame language, viz. that of our firſt parents. And what of all ſeems the moſt contradictory to that account, is the ſavage ſtate: Adam, as Moſes informs us, was endued by his Maker with an eminent degree of knowledge; and he certainly was an excellent preceptor to his children and their progeny, among whom he lived many generations. Whence then the degeneracy of all men into the ſavage ſtate? To account for that diſmal ca-

taſtrophe

America

82 His hypothesis concerning the origin of the different species,

taſtrophe, mankind muſt have ſuffered ſome terrible convulſion. That terrible convulſion is revealed to us in the hiſtory of the tower of Babel contained in the 11th chapter of Geneſis, which is, 'That, for many centuries after the deluge, the whole earth was of one 'language, and of one ſpeech; that they united to 'build a city on a plain in the land of Shinar, with a 'tower, whoſe top might reach unto heaven; that the 'Lord, beholding the people to be one, and to have 'all one language, and that nothing would be reſtrained from them which they imagined to do, con'founded their language that they might not under'ſtand one another, and ſcattered them abroad upon 'the face of all the earth.' Here light breaks forth in the midſt of darkneſs. By confounding the language of men, and ſcattering them abroad upon the face of all the earth, they were rendered ſavages. And to harden them for their new habitations, it was neceſſary that they ſhould be divided into different kinds, fitted for different climates. Without an immediate change of conſtitution, the builders of Babel could not poſſibly have ſubſiſted in the burning region of Guinea, nor in the frozen region of Lapland; houſes not being prepared, nor any other convenience, to protect them againſt a deſtructive climate."

83 Incomplete.

We may firſt remark, on his lordſhip's hypotheſis, that it is evidently incomplete; for, allowing the human race to have been divided into different ſpecies at the confuſion of languages, and that each ſpecies was adapted to a particular climate; by what means were they to get to the climates proper for them, or how were they to know that ſuch climates exiſted? How was an American, for inſtance, when languiſhing in an improper climate at Babel, to get to the land of the Amazons, or the banks of the Oroonoko, in his own country? or how was he to know that theſe places were more proper for him than others?—If, indeed we take the Scripture phraſe, "The Lord *ſcattered them abroad* upon the face of all the earth," in a certain ſenſe, we may account for it. If we ſuppoſe that the different ſpecies were immediately carried off by a whirlwind, or other ſupernatural means, to their proper countries, the difficulty will vaniſh; but if this is his lordſhip's interpretation, it is certainly a very ſingular one.

84 General principles to be kept in view in reaſoning on this ſubject.

Before entering upon a conſideration of the particular arguments uſed by our author for proving the diverſity of ſpecies in the human race, it will be proper to lay down the following general principles, which may ſerve as axioms. (1.) When we aſſert a multiplicity of ſpecies in the human race, we bring in a ſupernatural cauſe to ſolve a natural phenomenon: for theſe ſpecies are ſuppoſed to be the immediate work of the Deity. (2.) No perſon has a right to call any thing the immediate effect of omnipotence, unleſs by expreſs revelation from the Deity, or from a certainty that no natural cauſe is ſufficient to produce the effect. The reaſon is plain. The Deity is inviſible, and ſo are many natural cauſes; when we ſee an effect therefore, of which the cauſe does not manifeſt itſelf, we cannot know whether the immediate cauſe is the Deity or an inviſible natural power. An example of this we have in the phenomena of thunder and earthquakes, which were often aſcribed immediately to the Deity, but are now diſcovered to be the effects of electricity.

(3.) No perſon can aſſert natural [illegible] ſufficient to produce ſuch and ſuch [illegible] perfectly knows all theſe cauſes and [illegible] power in all poſſible caſes; and this no man [illegible] known or can know.

By keeping in view theſe principles, which [illegible] are ſelf-evident, we will eaſily [illegible] arguments to conſiſt entirely in a *petitio principii*.—In ſubſtance they are all reduced to this ſingle ſentence: "Natural philoſophers have been hitherto unſucceſsful in their endeavours to account for the differences obſerved among mankind, therefore theſe differences cannot be accounted for from natural cauſes."

85 Inconſiſtency in Lord Kames's argument.

His Lordſhip, however, tells us in the paſſages already quoted, that "a maſtiff differs not more from a ſpaniel, than a Laplander from a Dane;" that "it is vain to aſcribe to climate the low ſtature of the Laplanders, or their ugly viſage."—Yet, in a note on the word *Laplanders*, he ſubjoins, that, "by late accounts it appears, that the Laplanders are only degenerated Tartars; and that they and the Hungarians originally ſprung from the ſame breed of men, and from the ſame country."—The Hungarians are generally handſome and well made, like Danes, or like other people. The Laplanders, he tells us, differ as much from them as a maſtiff from a ſpaniel. Natural cauſes, therefore, according to Lord Kames himſelf, may cauſe two individuals of the ſame ſpecies of mankind differ from each other as much as a maſtiff does from a ſpaniel.

86 Remarkable difference of colour from accidental cauſes.

While we are treating this ſubject of colour, it may not be amiſs to obſerve, that a very remarkable difference of colour may accidentally happen to individuals of the ſame ſpecies. In the iſthmus of Darien, a ſingular race of men has been diſcovered.—They are of low ſtature, of a feeble make, and incapable of enduring fatigue. Their colour is a dead milk white; not reſembling that of fair people among Europeans, but without any bluſh or ſanguine complexion. Their ſkin is covered with a fine hairy down of a chalky white; the hair of their heads, their eyebrows, and eyelaſhes, are of the ſame hue. Their eyes are of a ſingular form, and ſo weak, that they can hardly bear the light of the ſun; but they ſee clearly by moonlight, and are moſt active and gay in the night. Among the negroes of Africa, as well as the natives of the Indian iſlands, a ſmall number of theſe people are produced. They are called *Albinos* by the Portugueſe, and *Kackerlakes* by the Dutch.

87 Colour no characteriſtic of a different ſpecies;

This race of men is not indeed permanent; but it is ſufficient to ſhow, that mere *colour* is by no means the characteriſtic of a certain ſpecies in mankind. The difference of colour in theſe individuals is undoubtedly owing to a natural cauſe. To conſtitute, then, a race of men of this colour, it would only be neceſſary that this cauſe, which at preſent is merely accidental, ſhould become permanent, and we cannot know but it may be ſo in ſome parts of the world.

88 Nor ſtature

If a difference in colour is no characteriſtic of a different ſpecies of mankind, much leſs can a difference in ſtature be thought ſo. In the ſouthern parts of America, there is ſaid to be a race of men exceeding the common ſize in height and ſtrength*. This account, however, is doubted by ſome: but be that as it will, it is certain that the Eſquimaux are as much under the common ſize, as the Patagonians are ſaid to

* Pata-

America. be above it. Nevertheleſs we are not to imagine, that either of theſe are ſpecific differences; ſeeing the Laplanders and Hungarians are both of the ſame ſpecies, and yet the former are generally almoſt a foot ſhorter than the latter; and if a difference of climate, or other accidental cauſes, can make the people of one country a foot ſhorter than the common ſize of mankind, undoubtedly accidental cauſes of a contrary nature may make thoſe of another country a foot taller than other men.

89 Different cauſes contribute towards an alteration in colour.

Though the ſun has undoubtedly a ſhare in the production of the ſwarthy colour of thoſe nations which are moſt expoſed to his influence; yet the manner of living to which people are accuſtomed, their victuals, their employment, &c. muſt contribute very much to a difference of complexion. There are ſome kinds of colouring roots, which if mixed with the food of certain animals, will tinge even their bones of a yellow colour. It cannot be thought any great degree of credulity to infer from this, that if theſe roots were mixed with the food of a white man, they might, without a miracle, tinge his ſkin of a yellow colour. If a man and woman were both to uſe food of this kind for a length of time, till they became as it were *radically dyed*, it is impoſſible, without the intervention of divine power, or of ſome extraordinary natural cauſe, but their children muſt be of the ſame colour: and was the ſame kind of food to be continued for ſeveral generations, it is more than probable that this colour might reſiſt the continued uſe of any kind of food whatever. See further the article COMPLEXION.

90 Habit capable of altering the inſtinct of animals.

Of this indeed we have no examples, but we have an example of changes much more wonderful. It is allowed on all hands, that it is more eaſy to work a change upon the body of a man, or any other animal, than upon his mind. A man that is naturally choleric may indeed learn to prevent the bad effects of his paſſion by reaſon, but the paſſion itſelf will remain as immutable as his colour. But to reaſon in a manner ſimilar to Lord Kames; though a man ſhould be naturally choleric, or ſubject to any other paſſion, why ſhould his children be ſo?—This way of reaſoning, however plauſible, is by no means concluſive, as will appear from the following paſſage in Mr Forſter's Voyage.

Voyage round the World, vol i. p. 254.

June 9th. "The officers who could not yet reliſh their ſalt proviſions after the refreſhments of New Zealand, had ordered their black dog, mentioned p. 135. to be killed: this day, therefore, we dined for the firſt time on a leg of it roaſted; which taſted ſo exactly like mutton, that it was abſolutely undiſtinguiſhable. In our cold countries, where animal food is ſo much uſed, and where to be carnivorous perhaps lies in the nature of men, or is indiſpenſably neceſſary to the preſervation of their health and ſtrength, it is ſtrange that there ſhould exiſt a Jewiſh averſion to dogs flesh, when hogs, the moſt uncleanly of all animals, are eaten without ſcruple. Nature ſeems expreſsly to have intended them for this uſe, by making their offſpring ſo very numerous, and their increaſe ſo quick and frequent. It may be objected, that the exalted degree of inſtinct which we obſerve in our dogs, inſpires us with great unwilling neſs to kill and eat them. But it is owing to the time we ſpend on the education of dogs, that they acquire thoſe eminent qualities which attach them ſo much to us. The natural qualities of our dogs may receive a wonderful improvement; but education muſt give its aſſiſtance, without which the human mind itſelf, though capable of an immenſe expanſion, remains in a very contracted ſtate. In New Zealand, and (according to former accounts of voyages) in the tropical iſles of the South ſea, the dogs are the moſt ſtupid dull animals imaginable, and do not ſeem to have the leaſt advantage in point of ſagacity over our ſheep, which are commonly made the emblems of ſillineſs. In the former country they are fed upon fiſh, in the latter on vegetables, and both theſe diets may have ſerved to alter their diſpoſition. Education may perhaps likewiſe graft new inſtincts; the New Zealand dogs are fed on the remains of their maſter's meals; they eat the bones of other dogs; and the puppies become true cannibals from the birth. We had a young New Zealand puppy on broad, which had certainly had no opportunity of taſting any thing but the mother's milk before we purchaſed it: however it eagerly devoured a portion of the fleſh and bones of the dog on which we dined to-day; while ſeveral others of the European breed taken on board at the Cape, turned from it without touching it.

America.

"On the 4th of Auguſt, a young bitch, of the terrier breed, taken on board at the Cape of Good Hope, and covered by a ſpaniel, brought ten young ones, one of which was dead. The New Zealand dog mentioned above, which devoured the bones of the roaſted dog, now fell upon the dead puppy, and ate of it with a ravenous appetite. This is a proof how far education may go in producing and propagating new inſtincts in animals. European dogs are never fed on the meat of their own ſpecies, but rather ſeem to abhor it. The New Zealand dogs, in all likelihood, are trained up from their earlieſt age to eat the remains of their maſter's meals: they are therefore uſed to feed upon fiſh, their own ſpecies, and perhaps human fleſh; and what was only owing to a habit at firſt, may have become inſtinct by length of time. This was remarkable in our cannibal dog; for he came on board ſo young, that he could not have been weaned long enough to have acquired a habit of devouring his own ſpecies, and much leſs of eating human fleſh; however, one of our ſeamen having cut his finger, held it out to the dog, who fell to greedily, licked it, and then began to bite it." *Ibid.* p. 243.

From this account it appears, that even the inſtincts of animals are not unchangeable by natural cauſes; and if theſe cauſes are powerful enough to change the diſpoſitions of ſucceeding generations, much more may we ſuppoſe them capable of making any poſſible alteration in the external appearance.

91 Confirmed by an obſervation on the Franks

We are not here neceſſitated to confine ourſelves to obſervations made on brute animals. The Franks are an example of the production of one general character, formed by ſome natural cauſe from a mixture of many different nations.—They were a motley multitude, conſiſting of various German nations dwelling beyond the Rhine: who, uniting in defence of their common liberty, took thence the name of *Franks*; the word *frank* ſignifying in their language, as it ſtill does in ours, *free*. Among them the following nations were mentioned, viz. the Actuarii, Chamavi, Bructeri, Salii, Friſii, Chauſi, Amſwarii, and Catti. We cannot ſuppoſe

America. suppose one character to belong to so many different nations; yet it is certain, that the Franks were nationally characterized as treacherous; and so deeply seems this quality to have been rooted in their nature, that their descendants have not got quite free of it in 1500 years. It is in vain, then to talk of different races of men, either from their colour, size, or prevailing dispositions, seeing we have undeniable proofs that all these may be changed, in the most remarkable manner, by natural causes, without any miraculous interposition of the Deity.

The next question, then, which presents itself is, From what part of the old world has America most probably been peopled?

92 Of the peopling of America.

Discoveries long ago made inform us, that an intercourse between the old continent and America might be carried on with facility from the north-west extremities of Europe and the north-east boundaries of Asia. In the ninth century the Norwegians discovered Greenland, and planted a colony there. The communication with that country was renewed in the last century by Moravian missionaries, in order to propagate their doctrines in that bleak and uncultivated region. By them we are informed that the north-west coast of Greenland is separated from America by a very narrow strait; that at the bottom of the bay it is highly probable that they are united; that the Esquimaux of America perfectly resemble the Greenlanders in their aspect, dress, and mode of living; and that a Moravian missionary, well acquainted with the language of Greenland, having visited the country of the Esquimaux, found, to his astonishment, that they spoke the same language with the Greenlanders, and were in every respect the same people. The same species of animals, too, are found in the contiguous regions. The bear, the wolf, the fox, the hare, the deer, the roebuck, the elk, frequent the forests of North America, as well as those in the north of Europe.

93 A communication between the old and new continents by two ways.

Other discoveries have proved, that if the two continents of Asia and America be separated at all, it is only by a narrow strait. From this part of the old continent, also, inhabitants may have passed into the new; and the resemblance between the Indians of America and the eastern inhabitants of Asia, would induce us to conjecture that they have a common origin. This is the opinion adopted by Dr Robertson in his History of America*, where we find it accompanied with the following narrative.

* *History of America*, vol. i. p. 273.

"While those immense regions which stretched eastward from the river Oby to the sea of Kamtschatka were unknown, or imperfectly explored, the north-east extremities of our hemisphere were supposed to be so far distant from any part of the new world, that it was not easy to conceive how any communication should have been carried on between them. But the Russians, having subjected the western part of Siberia to their empire, gradually extended their knowledge of that vast country, by advancing towards the east into unknown provinces. These were discovered by hunters in their excursions after game, or by soldiers employed in levying the taxes; and the court of Moscow estimated the importance of those countries only by the small addition which they made to its revenue. At length, Peter the Great ascended the Russian throne: His enlightened comprehensive mind, intent upon every circumstance that could aggrandise his empire, or render his reign illustrious, discerned consequences of these discoveries, which had escaped the observation of his ignorant predecessors. He perceived that, in proportion as the regions of Asia extended towards the east, they must approach nearer to America; that the communication between the continents, which had long been searched for in vain, would probably be found in this quarter; and that, by opening this intercourse, some part of the wealth and commerce of the western world might be made to flow into his dominions by a new channel. Such an object suited a genius that delighted in grand schemes. Peter drew up instructions with his own hands for prosecuting this design, and gave orders for carrying it into execution.

"His successors adopted his ideas, and pursued his plan. The officers whom the Russian court employed in this service, had to struggle with so many difficulties, that their progress was extremely slow. Encouraged by some faint traditions among the people of Siberia concerning a successful voyage in the year 1648 round the north-east promontory of Asia, they attempted to follow the same course. Vessels were fitted out, with this view, at different times, from the rivers Lena and Kolyma; but in a frozen ocean, which nature seems not to have destined for navigation, they were exposed to many disasters, without being able to accomplish their purpose. No vessel fitted out by the Russian court ever doubled this formidable cape; we are indebted for what is known of those extreme regions of Asia, to the discoveries made in excursions by land. In all those provinces, an opinion prevails, that countries of great extent and fertility lie at no considerable distance from their own coasts. These the Russians imagined to be part of America; and several circumstances concurred not only in confirming them in this belief, but in persuading them that some portion of that continent could not be very remote. Trees of various kinds, unknown in those naked regions of Asia, are driven upon the coast by an easterly wind. By the same wind floating ice is brought thither in a few days; flights of birds arrive annually from the same quarter; and a tradition obtains among the inhabitants, of an intercourse formerly carried on with some countries situated to the east.

"After weighing all these particulars, and comparing the position of the countries in Asia which they had discovered, with such parts in the north-west of America as were already known; the Russian court formed a plan, which would have hardly occurred to any nation less accustomed to engage in arduous undertakings and to contend with great difficulties. Orders were issued to build two vessels at Ochotz, in the sea of Kamtschatka, to sail on a voyage of discovery. Though that dreary uncultivated region furnished nothing that could be of use in constructing them but some larch trees: though not only the iron, the cordage, the sails, and all the numerous articles requisite for their equipment, but the provisions for victualling them, were to be carried through the immense deserts of Siberia, along rivers of difficult navigation, and roads almost impassable, the mandate of the sovereign, and the perseverance of the people, at last surmounted every obstacle. Two vessels were finished; and, under the command

America. command of the captains Behring and Tſchirikow, ſailed from Kamtſchatka in quſt of the new world, in a quarter where it had never been approached. They ſteered their courſe towards the eaſt; and though a ſtorm ſoon ſeparated the veſſels, which never rejoined, and many diſaſters befel them, the expectations from the voyage were not altogether fruſtrated. Each of the commanders diſcovered land, which to them appeared to be part of the American continent; and, according to their obſervations, it ſeems to be ſituated within a few degrees of the north-weſt coaſt of California. Each ſet ſome of his people aſhore: but in one place the inhabitants fled as the Ruſſians approached; in another, they carried off thoſe who landed, and deſtroyed their boats. The violence of the weather, and the diſtreſs of their crews, obliged both to quit this inhoſpitable coaſt. In their return they touched at ſeveral iſlands, which ſtretch in a chain from eaſt to weſt between the country which they had diſcovered and the coaſt of Aſia. They had ſome intercourſe with the natives, who ſeemed to them to reſemble the North Americans. They preſented to the Ruſſians the calumet, or pipe of peace, which is a ſymbol of friendſhip univerſal among the people of North America, and a uſage of arbitrary inſtitution peculiar to them."

94 Reaſons for ſuppoſing the two continents to have been once joined.

The more recent and accurate diſcoveries of the illuſtrious navigator Cook, and his ſucceſſor Clerke, have brought the matter ſtill nearer to certainty. The ſea, from the ſouth of Behring's ſtraits to the creſcent of iſles between Aſia and America, is very ſhallow. It deepens from theſe ſtraits (as the Britiſh ſeas do from thoſe of Dover) till ſoundings are loſt in the Pacific ocean; but that does not take place but to the ſouth of the iſles. Between them and the ſtraits is an increaſe from twelve to fifty-four fathom, except only off St Thaddeus Noſs, where there is a channel of greater depth. From the volcanic diſpoſition, it has been judged probable, not only that there was a ſeparation of the continents at the ſtraits of Behring, but that the whole ſpace from the iſles to that ſmall opening had once been occupied by land; and that the fury of the watery element, actuated by that of fire, had, in moſt remote times, ſubverted and overwhelmed the tract, and left the iſlands monumental fragments.

95 Probable cauſe of their ſubſequent ſeparation.

Without adopting all the fancies of Buffon, there can be no doubt, as the Abbé Clavigero obſerves, that our planet has been ſubject to great viciſſitudes, ſince the deluge. Ancient and modern hiſtories confirm the truth which Ovid has ſung in the name of Pythagoras:

Vidi ego quod fuerat quondam ſolidiſſima tellus,
Eſſe fretum; vidi factas ex æquore terras.

At preſent they plough thoſe lands over which ſhips formerly ſailed, and now they ſail over lands which were formerly cultivated; earthquakes have ſwallowed ſome lands, and ſubterraneous fires have thrown up others: the rivers have formed new ſoil with their mud; the ſea retreating from the ſhores has lengthened the land in ſome places, and advancing in others has covered it; it has ſeparated ſome territories which were formerly united, and formed new ſtraits and gulfs. We have examples of all theſe revolutions in the paſt century. Sicily was united to the continent of Naples, and the iſland Dianeo to Portia. Diodorus, Strabo, and other ancient authors, ſay the ſame thing of Spain and Africa, and affirm, that by America. a violent irruption of the ocean upon the land between the mountains Abyla and Calpé, that communication was broken, and the Mediterranean ſea was formed. Among the people of Ceylon there is a tradition that a ſimilar irruption of the ſea ſeparated their iſland from the peninſula of India. The ſame thing is believed by thoſe of Malabar with reſpect to the iſles of Maldivia, and with the Malayans with reſpect to Sumatra. It is certain, ſays the count de Buffon, that in Ceylon the earth has loſt thirty or forty leagues, which the ſea has taken from it; on the contrary, Tongres, a place of the Low Countries, has gained 30 leagues of land from the ſea. The northern part of Egypt owes its exiſtence to inundations of the Nile. The earth which this river has brought from the inland countries of Africa, and depoſited in its inundations, has formed a ſoil of more than 25 cubits in depth. In like manner, adds the above author, the province of the Yellow River in China, and that of Louiſiana, have only been formed of the mud of rivers. Pliny, Seneca, Diodorus, and Strabo, report innumerable examples of ſimilar revolutions, which we omit, that our diſſertation may not become too prolix; as alſo many modern revolutions, which are related in the theory of the earth of the count de Buffon and other authors. In South America, all thoſe who have obſerved with philoſophic eyes the peninſula of Yucatan, do not doubt that that country has once been the bed of the ſea; and, on the contrary, in the channel of Bahama many indications ſhow the iſland of Cuba to have been once united to the continent of Florida. In the ſtrait which ſeparates America from Aſia many iſlands are found, which probably were the mountains belonging to that tract of land which we ſuppoſe to have been ſwallowed up by earthquakes; which is made more probable by the multitude of volcanoes which we know of in the peninſula of Kamtſchatka. It is imagined, however, that the ſinking of that land, and the ſeparation of the two continents, has been occaſioned by thoſe great and extraordinary earthquakes mentioned in the hiſtories of the Americans, which formed an era almoſt as memorable as that of the deluge. The hiſtories of the Toltecas fix ſuch earthquakes in the year 1 Tecpatl; but as we know not to what century that belonged, we can form no conjecture of the time that great calamity happened. If a great earthquake ſhould overwhelm the iſthmus of Suez, and there ſhould be at the ſame time as great a ſcarcity of hiſtorians as there was in the firſt ages after the deluge, it would be doubted, in 300 or 400 years after, whether Aſia had ever been united by that part to Africa; and many would firmly deny it.

96 Separated only by a narrow ſtrait.

Whether that great event, the ſeparation of the continents, took place before or after the peopling of America, is as impoſſible as it is of little moment for us to know; but we are indebted to the above-mentioned navigators for ſettling the long diſpute about the point from which it was effected. Their obſervations prove, that in one place the diſtance between continent and continent is only 39 miles, not (as the author of the *Recherches Philoſophiques ſur les Americains* would have it) 8 or 10 leagues. This narrow ſtrait has alſo in the middle two iſlands, which would greatly facilitate the migration of the Aſiatics into the new world, ſuppoſing

97 Eaſe of the paſſage between them.

America. ſing that it took place in canoes after the convulſion which rent the two continents aſunder. Beſides, it may be added, that theſe ſtraits are, even in the ſummer, often filled with ice; in winter, often frozen. In either caſe mankind might find an eaſy paſſage; in the laſt, the way was extremely ready for quadrupeds to croſs and ſtock the continent of America. But where, from the vaſt expanſe of the north-eaſtern world, to fix on the firſt tribes who contributed to people the new continent, now inhabited almoſt from end to end, is a matter that baffles human reaſon. The learned may make bold and ingenious conjectures, but plain good ſenſe cannot always accede to them.

98 Conjectures concerning the firſt migrations into the new continent.

As mankind increaſed in numbers, they naturally protruded one another forward. Wars might be another cauſe of migrations. There appears no reaſon why the Aſiatic north might not be an *officina virorum* as well as the European. The overteeming country, to the eaſt of the Riphæan mountains, muſt find it neceſſary to diſcharge its inhabitants: the firſt great wave of people was forced forward by the next to it, more tumid and more powerful than itſelf; ſucceſſive and new impulſes continually arriving, ſhort reſt was given to that which ſpread over a more eaſtern tract; diſturbed again and again, it covered freſh regions; at length, reaching the fartheſt limits of the old world, found a new one, with ample ſpace to occupy unmoleſted for ages; till Columbus curſed them by a diſcovery, which brought again new ſins and new deaths to both worlds.

99 Mr Pennant's opinion.

"The inhabitants of the new world (Mr Pennant obſerves) do not conſiſt of the offſpring of a ſingle nation: different peoples, at ſeveral periods, arrived there; and it is impoſſible to ſay, that any one is now to be found on the original ſpot of its colonization. It is impoſſible, with the lights which we have ſo recently received, to admit that America could receive its inhabitants (at leaſt the bulk of them) from any other place than eaſtern Aſia. A few proofs may be added, taken from cuſtoms or dreſſes common to the inhabitants of both worlds; ſome have been long extinct in the old, others remain in both in full force.

100 The bulk of its inhabitants probably firſt received from the eaſtern part of Aſia.

"The cuſtom of ſcalping was a barbariſm in uſe with the Scythians, who carried about them at all times this ſavage mark of triumph: they cut a circle round the neck, and ſtripped off the ſkin, as they would that of an ox. A little image found among the Calmucks, of a Tartarian deity, mounted on a horſe, and ſitting on a human ſkin, with ſcalps pendent from the breaſt, fully illuſtrates the cuſtom of their Scythian progenitors, as deſcribed by the Greek hiſtorian. This uſage, as the Europeans know by horrid experience, is continued to this day in America. The ferocity of the Scythians to their priſoners extended to the remoteſt part of Aſia. The Kamtſchatkans, even at the time of their diſcovery by the Ruſſians, put their priſoners to death by the moſt lingering and excruciating inventions; a practice in full force to this very day among the aboriginal Americans. A race of the Scythians were ſtyled *Anthropophagi*, from their feeding on human fleſh. The people of Nootka Sound ſtill make a repaſt on their fellow-creatures: but what is more wonderful, the ſavage allies of the Britiſh army have been known to throw the mangled limbs of the French priſoners into the horrible caldron, and devour them with the ſame reliſh as that of a quadruped.

America.

"The Scythians were ſaid, by a certain fable, gradually to transform themſelves into wolves, and then to reſume the human ſhape. The new-diſcovered Americans about Nootka Sound [illegible] themſelves in dreſſes made of the ſkins of wolves and other wild beaſts, and wear even the heads fitted to their own. Theſe habits they uſe in the chaſe, to circumvent the animals of the field. But would not ignorance or ſuperſtition aſcribe to a [illegible] tamorphoſis theſe temporary expedients to deceive the brute creation?

101 Proofs from a ſimilarity of cuſtoms, &c.

102 Cuſtoms [illegible]

"In their marches, the Kamtſchatkans never went abreaſt, but followed one another in the ſame track. The ſame cuſtom is exactly obſerved by the Americans.

the Americans.

"The Tunguſi, the moſt numerous nation reſident in Siberia, prick their faces with ſmall punctures, with a needle, in various ſhapes; then rub into them charcoal, ſo that the marks become indelible. This cuſtom is ſtill obſerved in ſeveral parts of America. The Indians on the back of Hudſon's bay, to this day, perform the operation exactly in the ſame manner, and puncture the ſkin into various figures; as the natives of New Zealand do at preſent, and as the ancient Britons did with the herb glaſtum, or woad; and the Virginians, on the firſt diſcovery of that country by the Engliſh.

"The Tunguſi uſe canoes made of birch bark, diſtended over ribs of wood, and nicely ſewed together. The Canadians, and many other American nations, uſe no other ſort of boats. The paddles of the Tunguſi are broad at each end; thoſe of the people near Cook's river, and of Oonalaſcha, are of the ſame form.

"In burying of the dead, many of the American nations place the corpſe at full length, after preparing it according to their cuſtoms; others place it in a ſitting poſture, and lay by it the moſt valuable clothing, wampum, and other matters. The Tartars did the ſame; and both people agree in covering the whole with earth, ſo as to form a tumulus, barrow, or carnedd.

"Some of the American nations hang their dead in trees. Certain of the Tunguſi obſerve a ſimilar cuſtom.

"We can draw ſome analogy from dreſs: convenience in that article muſt have been conſulted on both continents, and originally the materials muſt have been the ſame, the ſkins of birds and beaſts. It is ſingular, that the conic bonnet of the Chineſe ſhould be found among the people of Nootka. I cannot give into the notion, that the Chineſe contributed to the population of the new world; but we can readily admit, that a ſhipwreck might furniſh thoſe Americans with a pattern for that part of the dreſs.

103 Other reſemblances.

"In reſpect to the features and form of the human body, almoſt every tribe found along the weſtern coaſt has ſome ſimilitude to the Tartar nations, and ſtill retain the little eyes, ſmall noſes, high cheeks, and broad faces. They vary in ſize, from the luſty Calmucks to the little Nogaians. The internal Americans, ſuch as the Five Indian nations, who are tall of

body

America. body, robuſt of make, and of oblong faces, are derived from a variety among the Tartars themſelves. The fine race of Tſchutſki ſeems to be the ſtock from which thoſe Americans are derived. The Tſchutſki, again, from that fine race of Tartars the Kabardinſki, or inhabitants of Kabarda.

"But about Prince William's ſound begins a race chiefly diſtinguiſhed by their dreſs, their canoes, and their inſtruments of the chaſe, from the tribes to the ſouth of them. Here commences the Eſquimaux people, or the race known by that name in the high latitudes of the eaſtern ſide of the continent. They may be divided into two varieties. At this place they are of the largeſt ſize. As they advance northward, they decreaſe in height, till they dwindle into the dwarfiſh tribes which occupy ſome of the coaſts of the Icy ſea, and the maritime parts of Hudſon's bay, of Greenland, and Terra de Labrador. The famous Japaneſe map, places ſome iſlands ſeemingly within the ſtraits of Behring, on which is beſtowed the title of *Ya Sue*, or the Kingdom of the Dwarfs. Does not this in ſome manner authenticate the chart, and give us reaſon to ſuppoſe that America was not unknown to the Japaneſe; and that they had (as is mentioned by Kæmpfer and Charlevoix) made voyages of diſcovery, and according to the laſt, actually wintered on the continent? That they might have met with the Eſquimaux is very probable: whom, in compariſon of themſelves, they might juſtly diſtinguiſh by the name of *dwarfs*. The reaſon of their low ſtature is very obvious: theſe dwell in a moſt ſevere climate, amidſt penury of food; the former in one much more favourable, abundant in proviſions; circumſtances that tend to prevent the degeneracy of the human frame. At the iſland of Oonalaſcha, a dialect of the Eſquimaux is in uſe, which was continued along the whole coaſt from thence northward."

104 The brute creation migrated by the ſame route.

The continent which ſtocked America with the human race poured in the brute creation through the ſame paſſage. Very few quadrupeds continued in the peninſula of Kamtſchatka; Mr Pennant enumerates only 25 which are inhabitants of land: all the reſt perſiſted in their migration, and fixed their reſidence in the new world. Seventeen of the Kamtſchatkan quadrupeds are found in America: others are common only to Siberia or Tartary, having, for unknown cauſes, entirely evacuated Kamtſchatka, and divided themſelves between America and the parts of Aſia above cited. Multitudes again have deſerted the old world even to an individual, and fixed their ſeats at diſtances moſt remote from the ſpot from which they took their departure; from Mount Ararat, the reſting-place of the ark, in a central part of the old world, and excellently adapted for the diſperſion of the animal creation to all its parts. We need not be ſtartled (ſays Mr Pennant) at the vaſt journeys many of the quadrupeds took to arrive at their preſent ſeats. Might not numbers of ſpecies have found a convenient abode in the vaſt Wilds of Aſia, inſtead of wandering to the Cordilleras of Chili? or might not others have been contented with the boundleſs plains of Tartary, inſtead of travelling thouſands of miles to the extenſive dales of Pampas?—To endeavour to elucidate common difficulties is certainly a trouble worthy of the philoſopher and of the divine; not to attempt it would be a criminal indolence, a neglect to

Vindicate the ways of God to man.

But there are multitudes of points beyond the human ability to explain, and yet are truths undeniable: the facts are indiſputable, notwithſtanding the cauſes are concealed. In ſuch caſes, faith muſt be called in to our relief. It would certainly be the height of folly to deny to that Being who broke open the fountains of the great deep to effect the deluge—and afterwards, to compel the diſperſion of mankind to people the globe, directed the confuſion of languages—powers inferior in their nature to theſe. After theſe wondrous proofs of Omnipotency, it will be abſurd to deny the poſſibility of infuſing inſtinct into the brute creation. *Deus eſt anima brutorum;* "God himſelf is the ſoul of brutes:" His pleaſure muſt have determined their will, and directed ſeveral ſpecies, and even whole genera, by impulſe irreſiſtible, to move by ſlow progreſſion to their deſtined regions. But for that, the lama and the pacos might ſtill have inhabited the heights of Armenia and ſome more neighbouring Alps, inſtead of labouring to gain the diſtant Peruvian Andes; the whole genus of armadillos, ſlow of foot, would never have quitted the torrid zone of the old world for that of the new; and the whole tribe of monkeys would have gamboled together in the foreſts of India, inſtead of dividing their reſidence between the ſhades of Indoſtan and the deep foreſts of the Braſils. Lions and tigers might have infeſted the hot parts of the new world, as the firſt do the deſerts of Africa, and the laſt the provinces of Aſia; or the pantherine animals of South America might have remained additional ſcourges with the ſavage beaſts of thoſe ancient continents. The old world would have been overſtocked with animals; the new remained an unanimated waſte! or both have contained an equal portion of every beaſt of the earth. Let it not be objected, that animals bred in a ſouthern climate, after the deſcent of their parents from the ark, would be unable to bear the froſt and ſnow of the rigorous north, before they reached South America, the place of their final deſtination. It muſt be conſidered, that the migration muſt have been the work of ages; that in the courſe of their progreſs each generation grew hardened to the climate it had reached; and that after their arrival in America, they would again be gradually accuſtomed to warmer and warmer climates, in their removal from north to ſouth, as they had been in the reverſe, or from ſouth to north. Part of the tigers ſtill inhabit the eternal ſnows of Ararat; and multitudes of the very ſame ſpecies live, but with exalted rage, beneath the line, in the burning ſoil of Borneo or Sumatra; but neither lions nor tigers ever migrated into the new world. A few of the firſt are found in India and Perſia, but they are found in numbers only in Africa. The tiger extends as far north as Weſtern Tartary, in lat. 40. 50. but never has reached Africa."

In fine, the conjectures of the learned reſpecting the vicinity of the old and new worlds, are now, by the diſcoveries of our great navigators, left in conviction; and in the place of imaginary hypotheſes, the real place of migration is incontrovertibly pointed out.

Some

America. Some (from a paſſage in Plato) have extended over the Atlantic, from the ſtraits of Gibraltar to the coaſt of North and South America, an iſland equal in ſize to the continents of Aſia and Africa; over which had paſſed, as over a bridge, from the latter, men and animals, woolly-headed negroes, and lions and tigers, none of which ever exiſted in the new world. A mighty ſea aroſe, and in one day and night engulfed this ſtupendous tract, and with it every being which had not completed its migration into America: The whole negro race, and almoſt every quadruped, now inhabitants of Africa, periſhed in this critical day. Five only are to be found at preſent in America; and of theſe only one, the bear, in South America: Not a ſingle cuſtom, common to the natives of Africa and America, evince a common origin. Of the quadrupeds, the bear, ſtag, wolf, fox, and weaſel, are the only animals which we can pronounce with certainty to be found on each continent. The ſtag, fox, and weaſel, have made alſo no farther progreſs in Africa than the north; but on the ſame continent the wolf is ſpread over every part, yet is unknown in South America, as are the fox and weaſel. In Africa and South America the bear is very local, being met with only in the north of the firſt, and on the Andes in the laſt. Some cauſes unknown arreſted its progreſs in Africa, and impelled the migration of a few into the Chilian Alps, and induced them to leave unoccupied the vaſt tract from North America to the lofty Cordilleras.

105 Remains of antiquity in America.

Alluſions have often been made to ſome remains, on the continent of America, of a more poliſhed and cultivated people, when compared with the tribes which poſſeſſed it on its firſt diſcovery by Europeans. Mr Barton, in his *Obſervations on ſome parts of Natural Hiſtory*, Part I. has collected the ſcattered hints of Kalm, Carver, and ſome others, and has added a plan of a regular work, which has been diſcovered on the banks of the Muſkingum, near its junction with the Ohio. Theſe remains are principally ſtone walls, large mounds of earth, and a combination of theſe mounds with the walls, ſuſpected to have been fortifications. In ſome places the ditches and the fortreſs are ſaid to have been plainly ſeen: in others, furrows, as if the land had been ploughed.

The mounds of earth are of two kinds: they are artificial tumuli, deſigned as repoſitories for the dead; or they are of a greater ſize, for the purpoſe of defending the adjacent country; and with this view they are artificially conſtructed, or advantage is taken of the natural eminences, to raiſe them into a fortification.

The remains near the banks of the Muſkingum, are ſituated about one mile above the junction of that river with the Ohio, and 160 miles below Fort Pitt. They conſiſt of a number of walls and other elevations, of ditches, &c. altogether occupying a ſpace of ground about 300 perches in length, and from about 150 to 25 or 20 in breadth. The town, as it has been called, is a large level, encompaſſed by walls, nearly in the form of a ſquare, the ſides of which are from 96 to 86 perches in length. Theſe walls are, in general, about 10 feet in height above the level on which they ſtand, and about 20 feet in diameter at the baſe, but at the top they are much narrower; they are at preſent overgrown with vegetables, of different kinds, and, among others, with trees of ſeveral feet in diameter. The chaſms, or openings in the walls, [illegible] intended for gateways; they are three in number at each ſide, beſides the ſmaller opening in the [illegible]. Within the walls there are three elevations, [illegible] ſix feet in height, with regular aſcents to them: theſe elevations conſiderably reſemble ſome of the [illegible] already mentioned, which have been diſcovered over the river Miſſiſippi. This author's opinion is, That the Toltecas, or ſome other Mexican nation, were the people to whom the mounts and fortifications, which he has deſcribed, owe their exiſtence; and that thoſe people were probably the deſcendants of the Danes. The former part of this conjecture is thought probable, from the ſimilarity of the Mexican mounts and fortifications, deſcribed by the abbe Clavigero and other authors, to thoſe deſcribed by our author; and from the tradition of the Mexicans, that they came from the north-weſt; for, if we can rely on the teſtimony of late travellers, fortifications ſimilar to thoſe mentioned by Mr Barton, have been diſcovered as far to the north as Lake Pepin; and we find them, as we approach to the ſouth, even as low as the coaſts of Florida. The ſecond part of our author's conjecture appears not ſo well ſupported.

America.

106 The ancients ſuppoſed to have had ſome imperfect notion of a new world.

It is believed by many, that the ancients had ſome imperfect notions of a new world; and ſeveral ancient authors are quoted in confirmation of this. In a book aſcribed to the philoſopher Ariſtotle, we are told that the Carthaginians diſcovered an iſland far beyond the pillars of Hercules, large, fertile, and finely watered with navigable rivers, but uninhabited. This iſland was diſtant a few days ſailing from the continent; its beauty induced the diſcoverers to ſettle there; but the policy of Carthage diſlodged the colony, and laid ſtrict prohibition on all the ſubjects of the ſtate not to attempt any future eſtabliſhment. This account is alſo confirmed by an hiſtorian of no mean credit, who relates, that the Tyrians would have ſettled a colony on the new diſcovered iſland, but were oppoſed by the Carthaginians for ſtate reaſons. The following paſſage has alſo been quoted from Seneca's *Medea*, in confirmation of this notion.

——Venient annis
Sæcula ſeris, quibus oceanus
Vincula rerum laxet, et ingens
Pateat tellus, Typhyſque novos
Deteat orbes; nec ſit terris
Ultima Thule.——

Act. III. ver. 375.

Other authors are alſo quoted in ſupport of this belief. But however this may be, nobody ever believed the exiſtence of this continent ſo firmly as to go in queſt of it; at leaſt, there are no accounts well ſupported that America received any part of its firſt inhabitants from Europe prior to the 15th century. The Welſh fondly imagine that our country contributed, in 1170, to people the new world, by the adventure of Madoc, ſon of Owen Gwynedd, who, on the death of his father, ſailed there, and colonized part of the country. All that is advanced in proof is, a quotation from one of our poets, which proves no more than that he had diſtinguiſhed himſelf by ſea and land. It is pretended that he made two voyages: that ſailing weſt, he left Ireland

107 Pretenſions of the Welſh to the diſcovery of America in 12th century.

America. Ireland ſo far to the north, that he came to a land unknown, where he ſaw many ſtrange things; that he returned home, and, making a report of the fruitfulneſs of the new-diſcovered country, prevailed on numbers of the Welſh of each ſex to accompany him on a ſecond voyage, from which he never returned. The favourers of this opinion aſſert, that ſeveral Welſh words, ſuch as *gwrando*, "to hearken or liſten;" the iſle of *Croſo*, or "welcome;" *Cape Breton*, from the name of our own iſland; *gwynndwr*, or "the white water;" and *pengwyn*, or "the bird with a white head;" are to be found in the American language. But likeneſs of ſound in a few words will not be deemed ſufficient to eſtabliſh the fact; eſpecially if the meaning has been evidently perverted: for example, the whole penguin tribe have unfortunately not only black heads, but are not inhabitants of the northern hemiſphere; the name was alſo beſtowed on them by the Dutch, *à pinguedine*, from their exceſſive fatneſs; but the inventor of this, thinking to do honour to our country, inconſiderately caught at a word of European origin, and unheard of in the new world. It may be added, that the Welſh were never a naval people; that the age in which Madoc lived was peculiarly ignorant in navigation; and the moſt which they could have attempted muſt have been a mere coaſting voyage.

108 Thoſe of the Norwegians better founded.

The Norwegians put in for a ſhare of the glory, on grounds rather better than the Welſh. By their ſettlements in Iceland and in Greenland, they had arrived within ſo ſmall a diſtance of the new world, that there is at leaſt a poſſibility of its having been touched at by a people ſo verſed in maritime affairs, and ſo adventurous, as the ancient Nortmans were. The proofs are much more numerous than thoſe produced by the Britiſh hiſtorians; for the diſcovery is mentioned in ſeveral of the Icelandic manuſcripts. The period was about the year 1002, when it was viſited by one Biorn: and the diſcovery purſued to greater effect by Lief, the ſon of Eric, the diſcoverer of Greenland. It does not appear that they reached farther than Labrador; on which coaſt they met with Eſquimaux, on whom they beſtowed the name of *Skralingues*, or dwarfiſh people, from their ſmall ſtature. They were armed with bows and arrows, and had leathern canoes, ſuch as they have at preſent. All this is probable; nor ſhould the tale of the German, called *Turkil*, one of the crew, invalidate the account. He was one day miſſing; but ſoon returned, leaping and ſinging with all the extravagant marks of joy a human creature could ſhow, on diſcovering the inebriating fruit of his country, the grape: Torfæus even ſays, that he returned in a ſtate of intoxication. To convince his commander, he brought ſeveral bunches, who from that circumſtance named the country *Vinland*. It is not to be denied that North America produces the true vine; but it is found in far lower latitudes than our adventurers could reach in the time employed in their voyage, which was comprehended in a very ſmall ſpace. There appears no reaſon to doubt of the diſcovery; but as the land was never colonized, nor any advantages made of it, it may be fairly conjectured, that they reached no farther than the barren country of Labrador. In ſhort, it is from a much later period that we muſt date the real diſcovery of America.

Towards the cloſe of the 15th century, Venice and Genoa being rivals in commerce, in which the former had greatly the ſuperiority, Chriſtopher Columbus, a native of Genoa, whoſe knowledge of the true figure of the earth, however attained, was much ſuperior to the general notions of the age in which he lived, conceived a project of ſailing to the Eaſt Indies by directing his courſe weſtward. The deſign was founded upon a miſtake of the geographers of thoſe days, who placed the eaſtern parts of Aſia immenſely too far to the eaſtward; ſo that, had they been in the right, the ſhorteſt way would have been to ſail directly weſtward. He applied firſt to his own countrymen; but being rejected by them, he applied to France, where he was laughed at and ridiculed. He next applied to Henry VII. of England; but meeting with a diſappointment there, he made an application to Portugal, where he met with the ſame mortifying reception. Spain was his next reſource: where, after eight years attendance, he obtained, in 1492, a fleet of three ſhips. The largeſt, a ſhip of no conſiderable burden, was commanded by Columbus as admiral, who gave it the name of *Santa Maria*, out of reſpect for the bleſſed Virgin, whom he honoured with ſingular devotion. Of the ſecond, called the *Pinta*, Martin Pinzon was captain, and his brother Francis pilot. The third, named the *Nigna*, was under the command of Vincent Yanez Pinzon. Theſe two were light veſſels, hardly ſuperior in burden or force to large boats. This ſquadron, if it merits that name, was victualled for 12 months, and had on board 90 men, moſtly ſailors, together with a few adventurers who followed the fortune of Columbus, and ſome gentlemen of Iſabella's court, whom ſhe appointed to accompany him. Though the expence of the undertaking was one of the circumſtances which chiefly alarmed the court of Spain, and retarded ſo long the negotiation with Columbus, the ſum employed in fitting out this ſquadron did not exceed 4000l. As Columbus was deeply impreſſed with ſentiments of religion, he would not ſet out upon an expedition ſo arduous, and of which one great object was to extend the knowledge of the Chriſtian faith, without imploring publicly the guidance and protection of Heaven. With this view, he, together with all the perſons under his command, marched in ſolemn proceſſion to the monaſtery of Rabida. After confeſſing their ſins, and obtaining abſolution, they received the holy ſacrament from the hands of the guardian, who joined his prayers to theirs for the ſucceſs of an enterpriſe which he had ſo zealouſly patroniſed.

America. 109 The projects of Chriſtopher Columbus.

110 His voyage

Next morning, being Friday the third day of Auguſt, in the year 1492, Columbus ſet ſail a little before ſunriſe, in preſence of a vaſt crowd of ſpectators, who ſent up their ſupplications to Heaven for the proſperous iſſue of the voyage, which they wiſhed rather than expected. Columbus ſteered directly for the Canary iſlands, and arrived there without any occurrence that would have deſerved notice on any other occaſion: but in a voyage of ſuch expectation and importance, every circumſtance was the object of attention. The rudder of the Pinta broke looſe the day after ſhe left the harbour, and that accident alarmed the crew, no leſs ſuperſtitious than unſkilful, as a certain omen of the unfortunate deſtiny of the expedition. Even in the ſhort run to the Canaries, the ſhips were found to be ſo crazy and ill appointed, as to be very improper

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for a navigation which was expected to be both long and dangerous. Columbus refitted them, however, to the beſt of this power; and having ſupplied himſelf with freſh proviſions, he took his departure from Gomera, one of the moſt weſterly of the Canary iſlands, on the ſixth day of September.

Here the voyage of diſcovery may properly be ſaid to begin; for Columbus, holding his courſe due weſt, left immediately the uſual track of navigation, and ſtretched into unfrequented and unknown ſeas. The firſt day, as it was very calm, he made but little way; but on the ſecond, he loſt ſight of the Canaries; and many of the ſailors, dejected already and diſmayed, when they contemplated the boldneſs of the undertaking, began to beat their breaſts, and to ſhed tears, as if they were never more to behold land. Columbus comforted them with aſſurances of ſucceſs, and the proſpect of vaſt wealth, in thoſe opulent regions whither he was conducting them. He regulated every thing by his ſole authority; he ſuperintended the execution of every order; and allowing himſelf only a few hours for ſleep, he was at all other times upon deck. As his courſe lay through ſeas which had not formerly been viſited, the ſounding line or inſtruments for obſervation were continually in his hands. After the example of the Portugueſe diſcoverers, he attended to the motion of tides and currents; watched the flight of birds, the appearance of fiſhes, of ſea-weeds, and of every thing that floated on the waves; and entered every occurrence, with a minute exactneſs, in the journal which he kept. As the length of the voyage could not fail of alarming ſailors habituated only to ſhort excurſions, Columbus endeavoured to conceal from them the real progreſs which they made. With this view, though they ran 18 leagues on the ſecond day after they left Gomera, he gave out that they had advanced only 15: and he uniformly employed the ſame artifice of reckoning ſhort during the whole voyage. By the 14th of September, the fleet was above 200 leagues to the weſt of the Canary iſles, at a greater diſtance from land than any Spaniard had been before that time. There they were ſtruck with an appearance no leſs aſtoniſhing than new. They obſerved that the magnetic needle, in their compaſſes, did not point exactly to the polar ſtar, but varied towards the weſt; and as they proceeded this variation increaſed. This appearance, which is now familiar, though it ſtill remains one of the myſteries of nature, into the cauſe of which the ſagacity of man hath not been able to penetrate, filled the companions of Columbus with terror. They were now in a boundleſs unknown ocean, far from the uſual courſe of navigation; nature itſelf ſeemed to be altered, and the only guide which they had left was about to fail them. Columbus, with no leſs quickneſs than ingenuity, invented a reaſon for this appearance, which, though it did not ſatisfy himſelf, ſeemed ſo plauſible to them, that it diſpelled their fears, or ſilenced their murmurs.

111 Aſtoniſhment excited by obſerving the variation of the compaſs.

He ſtill continued to ſteer due weſt, nearly in the ſame latitude with the Canary iſlands. In this courſe he came within the ſphere of the trade wind, which blows invariably from eaſt to weſt between the tropics, and a few degrees beyond them. He advanced before this ſteady gale with ſuch uniform rapidity, that it was ſeldom neceſſary to ſhift a ſail. When about 400 leagues to the weſt of the Canaries, he found the ſea ſo covered with weeds, that it reſembled a meadow of vaſt extent; and in ſome places they were ſo thick as to retard the motion of the veſſels. This ſtrange appearance occaſioned new alarm and diſquiet. The ſailors imagined that they were now arrived at the utmoſt boundary of the navigable ocean; that theſe floating weeds would obſtruct their further progreſs, and concealed dangerous rocks, or ſome large tract of land, which had ſunk, they knew not how, in that place. Columbus endeavoured to perſuade them, that what had alarmed, ought rather to have encouraged them, and was to be conſidered as a ſign of approaching land. At the ſame time, a briſk gale aroſe, and carried them forward. Several birds were ſeen hovering about the ſhip, and directing their flight towards the weſt. The deſponding crew reſumed ſome degree of ſpirit, and began to entertain freſh hopes.

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Upon the firſt of October, they were, according to the admiral's reckoning, 770 leagues to the weſt of the Canaries; but leſt his men ſhould be intimidated by the prodigious length of the navigation, he gave out that they had proceeded only 584 leagues; and, fortunately for Columbus, neither his own pilot, nor thoſe of the other ſhips, had ſkill ſufficient to correct this error, and diſcover the deceit. They had now been above three weeks at ſea; they had proceeded far beyond what former navigators had attempted or deemed poſſible: all their prognoſtics of diſcovery, drawn from the flight of birds and other circumſtances, had proved fallacious; the appearances of land, with which their own credulity or the artifice of their commander had from time to time flattered and amuſed them, had been altogether illuſive, and their proſpect of ſucceſs ſeemed now to be as diſtant as ever. Theſe reflections occurred often to men, who had no other object or occupation, than to reaſon and diſcourſe concerning the intention and circumſtances of their expedition. They made impreſſion at firſt upon the ignorant and timid, and extending by degrees to ſuch as were better informed or more reſolute, the contagion ſpread at length from ſhip to ſhip. From ſecret whiſpers or murmurings they proceeded to open cabals and public complaints. They taxed their ſovereign with inconſiderate credulity, in paying ſuch regard to the vain promiſes and raſh conjectures of an indigent foreigner, as to hazard the lives of ſo many of her own ſubjects, in proſecuting a chimerical ſcheme. They affirmed that they had fully performed their duty, by venturing ſo far in an unknown and hopeleſs courſe, and could incur no blame, for refuſing to follow, any longer, a deſperate adventurer to certain deſtruction. They contended, that it was neceſſary to think of returning to Spain, while their crazy veſſels were ſtill in a condition to keep the ſea, but expreſſed their fears that the attempt would prove vain, as the wind which had hitherto been ſo favourable to their courſe, muſt render it impoſſible to ſail in the oppoſite direction. All agreed that Columbus ſhould be compelled by force to adopt a meaſure on which their common ſafety depended. Some of the more audacious propoſed, as the moſt expeditious and certain method for getting rid at once of his remonſtrances, to throw him in the ſea; being perſuaded

America. that, upon their return to Spain, the death of an unſucceſsful projector would excite little concern, and be inquired into with no curioſity.

112 Perilous ſituation of Columbus.

Columbus was fully ſenſible of his perilous ſituation. He had obſerved, with great uneaſineſs, the fatal operation of ignorance and of fear in producing diſaffection among his crew; and ſaw that it was now ready to burſt out into open mutiny. He retained, however, perfect preſence of mind. He affected to ſeem ignorant of their machinations. Notwithſtanding the agitation and ſolicitude of his own mind, he appeared with a cheerful countenance; like a man ſatisfied with the progreſs which he had made, and confident of ſucceſs. Sometimes he employed all the arts of inſinuation to ſoothe his men. Sometimes he endeavoured to work upon their ambition or avarice, by magnificent deſcriptions of the fame and wealth which they were about to acquire. On other occaſions, he aſſumed a tone of authority, and threatened them with vengeance from their ſovereign, if, by their daſtardly behaviour, they ſhould defeat this noble effort to promote the glory of God, and to exalt the Spaniſh name above that of every other nation. Even with ſeditious ſailors, the words of a man whom they had been accuſtomed to reverence were weighty and perſuaſive; and not only reſtrained them from theſe violent exceſſes which they meditated, but prevailed with them to accompany their admiral for ſome time longer.

As they proceeded, the indications of approaching land ſeemed to be more certain, and excited hope in proportion. The birds began to appear in flocks, making towards the ſouth-weſt. Columbus, in imitation of the Portugueſe navigators, who had been guided in ſeveral of their diſcoveries by the motion of birds, altered his courſe from due weſt towards that quarter whither they pointed their flight. But after holding on for ſeveral days in this new direction without any better ſucceſs than formerly, having ſeen no object during 30 days but the ſea and the ſky, the hopes of his companions ſubſided faſter than they had riſen; their fears revived with additional force; impatience, rage, and deſpair, appeared in every countenance. All ſenſe of ſubordination was loſt. The officers, who had hitherto concurred with Columbus in opinion, and ſupported his authority, now took part with the private men; they aſſembled tumultuouſly on the deck, expoſtulated with their commander, mingled threats with their expoſtulations, and required him inſtantly to tack about and to return to Europe. Columbus perceived that it would be of no avail to have recourſe to any of his former arts, which having been tried ſo often had loſt their effect; and that it was impoſſible to rekindle any zeal for the ſucceſs of the expedition among men in whoſe breaſts fear had extinguiſhed every generous ſentiment. He ſaw that it was no leſs vain to think of employing either gentle or ſevere meaſures, to quell a mutiny ſo general and ſo violent. It was neceſſary, on all theſe accounts, to ſoothe paſſions which he could no longer command, and to give way to a torrent too impetuous to be checked. He promiſed ſolemnly to his men that he would comply with their requeſt, provided they would accompany him, and obey his commands for three days longer; and if, during that time, land were not diſcovered, he would then abandon the enterpriſe, and direct his courſe towards Spain.

113 His crews ready to mutiny.

Enraged as the ſailors were, and impatient to turn their faces again towards their native country, this propoſition did not appear to them unreaſonable. Nor did Columbus hazard much in confining himſelf to a term ſo ſhort. The preſages of diſcovering land were now ſo numerous and promiſing, that he deemed them infallible. For ſome days the ſounding line reached the bottom, and the ſoil which it brought up indicated land to be at no great diſtance. The flocks of birds increaſed; and were compoſed not only of ſea fowl, but of ſuch land birds as could not be ſuppoſed to fly far from the ſhore. The crew of the Pinta obſerved a cane floating which ſeemed to be newly cut, and likewiſe a piece of timber artificially carved. The ſailors aboard the Nigna took up the branch of a tree with red berries perfectly freſh. The clouds around the ſetting ſun aſſumed a new appearance; the air was more mild and warm; and, during night, the wind became unequal and variable. From all theſe ſymptoms, Columbus was ſo confident of being near land, that on the evening of the 11th of October, after public prayers for ſucceſs, he ordered the ſails to be furled, and the ſhips to lie by, keeping ſtrict watch, leſt they ſhould be driven aſhore in the night. During this interval of ſuſpenſe and expectation, no man ſhut his eyes, all kept upon deck, gazing intently towards that quarter, where they expected to diſcover the land which had been ſo long the object of their wiſhes. America.

114 Their joy on deſcrying the coaſt.

About two hours before midnight, Columbus ſtanding on the forecaſtle, obſerved a light at a diſtance, and privately pointed it out to Pedro Guttierez, a page of the queen's wardrobe. Guttierez perceived it; and calling to Salcedo comptroller of the fleet, all three ſaw it in motion, as if it were carried from place to place. A little after midnight the joyful ſound of *Land! Land!* was heard from the Pinta, which kept always ahead of the other ſhips. But having been ſo often deceived by fallacious appearances, every man was now become ſlow of belief; and waited, in all the anguiſh of uncertainty and impatience, for the return of day. As ſoon as morning dawned, all doubts and fears were diſpelled. From every ſhip an iſland was ſeen about two leagues to the north, whoſe flat and verdant fields, well ſtored with wood, and watered with many rivulets, preſented the aſpect of a delightful country. The crew of the Pinta inſtantly began the *Te Deum*, as a hymn of thankſgiving to God; and were joined by thoſe of the other ſhips, with tears of joy and tranſports of congratulation. This office of gratitude to heaven was followed by an act of juſtice to their commander. They threw themſelves at the feet of Columbus, with feelings of ſelf-condemnation mingled with reverence. They implored him to pardon their ignorance, incredulity, and inſolence, which had created him ſo much unneceſſary diſquiet, and had ſo often obſtructed the proſecution of his well-concerted plan; and paſſing, in the warmth of their admiration, from one extreme to another, they now pronounced the man whom they had ſo lately reviled and threatened, to be a perſon inſpired by Heaven with ſagacity and fortitude more than human, in order to accompliſh a deſign ſo far beyond the ideas and conception of all former ages.

As ſoon as the ſun aroſe, all their boats were manned and armed. They rowed towards the iſland with their

America.

their colours displayed, with warlike music, and other martial pomp. As they approached the coast, they saw it covered with a multitude of people, whom the novelty of the spectacle had drawn together, whose attitudes and gestures expressed wonder and astonishment at the strange objects which presented themselves to their view. Columbus was the first European who set foot in the new world which he had discovered. He landed in a rich dress, and with a naked sword in his hand. His men followed; and, kneeling down, they all kissed the ground which they had so long desired to see. They next erected a crucifix; and, prostrating themselves before it, returned thanks to God for conducting their voyage to such a happy issue.

115 They land in one of the islands of the new world.

The above was one of the Bahama islands; to which he gave the name of *San Salvador*, and took possession of it in the name of their Catholic majesties. In this first voyage he discovered several other of the Lucayo or Bahama islands, with those of Cuba and Hispaniola. The natives considered the Spaniards as divinities, and the discharge of the artillery as their thunder: they fell prostrate at the sound. The women, however, offered their favours, and courted the embraces of their new guests as men. Their husbands were not jealous of them; and in the arms of these wantons the companions of Columbus are said to have caught that malady which directs its poison to the springs of life. In a second voyage many new islands were discovered. In a third, he attained the great object of his ambition, by discovering the continent of America, near the mouth of the river Oroonoko, on the first day of August 1498. His success produced a crowd of adventurers from all nations; but the year before this, the northern continent had been discovered by Sebastian Cabot in the service of Henry VII. of England.

116 The continent afterwards discovered.

Notwithstanding the many settlements of the Europeans in this continent, great part of America remains still unknown. The northern continent contains the British colonies of Hudson's Bay, Canada, Nova Scotia, New England, New York, New Jersey, Pennsylvania, Maryland, Virginia, North and South Carolina, Georgia, East and West Florida. It contains also the Spanish territories of Louisiana, New Mexico, California, and Mexico. Besides these, there are immense regions to the west and north, the boundaries of which have never yet been discovered. In such as are in any degree known, dwell the Esquimaux, the Algonquins, the Hurons, the Iroquois, the Cherokees, the Chickasaws, and many other tribes of Indians. In the southern continent lie the Spanish provinces of Terra Firma, Guiana, Peru, Paraguay, and Chili; together with that of Brasil, belonging to the Portuguese; and the country of Surinam, belonging to the Dutch. Vast tracts, however, in the inland parts, are unknown, being comprehended under the general name of *Amazonia*. A large district also, said to be the residence of a gigantic race of men, lies on the east side of the continent, between the straits of Magellan and the province of Paraguay. See PATAGONIA.

117 Division of America.

This vast country produces most of the metals, minerals, plants, fruits, trees, and woods, to be met with in the other parts of the world, and many of them in greater quantities and high perfection. The gold and silver of America have supplied Europe with such immense quantities of those valuable metals, that they are become vastly more common; so that the gold and silver of Europe now bear little proportion to the high price set upon them before the discovery of America. America.

118 Its productions.

It also produces diamonds, pearls, emeralds, amethysts, and other valuable stones, which, by being brought into Europe, have contributed likewise to lower their value. To these, which are chiefly the production of Spanish America, may be added a great number of other commodities, which, though of less price, are of much greater use; and many of them make the ornament and wealth of the British empire in this part of the world. Of these are the plentiful supplies of cochineal, indigo, anatto, logwood, brazil, fustic, pimento, lignumvitæ, rice, ginger, cocoa or the chocolate nut, sugar, cotton, tobacco, banillas, red-wood, the balsams of Tolu, Peru, and Chili, that valuable article in medicine the Jesuits bark, mechoacan, sassafras, sarsaparilla, cassia, tamarinds, hides, furs, ambergris, and a great variety of woods, roots, and plants; to which, before the discovery of America, we were either entire strangers, or forced to buy at an extravagant rate from Asia and Africa, through the hands of the Venetians and Genoese, who then engrossed the trade of the eastern world.

On this continent there grows also a variety of excellent fruits; as pine-apples, pomegranates, citrons, lemons, oranges, malicatons, cherries, pears, apples, figs, grapes; great numbers of culinary, medicinal, and other herbs, roots, and plants; with many exotic productions, which are nourished in as great perfection as in their native soil.

119 The different proprietors of America.

Although the Indians still live in the quiet possession of many large tracts, America, so far as known, is chiefly claimed, and divided into colonies, by three European nations, the Spaniards, English, and Portuguese. The Spaniards, as they first discovered it, have the largest and richest portion, extending from New Mexico and Louisiana in North America, to the straits of Magellan in the South sea, excepting the large province of Brasil, which belongs to Portugal; for though the French and Dutch have some forts in Surinam and Guiana, they scarcely deserve to be considered as proprietors of any part of the southern continent.

Next to Spain, the most considerable proprietor of America was Great Britain, who derived her claim to North America from the first discovery of that continent by Sebastian Cabot in the name of Henry VII. anno 1497, about six years after the discovery of South America by Columbus in the name of the king of Spain. This country was in general called *Newfoundland*; a name which is now appropriated solely to an island upon its coast. It was a long time before we made an attempt to settle in this country. Sir Walter Raleigh, an uncommon genius and a brave commander, first showed the way, by planting a colony in the southern part, which he called *Virginia*, in honour of his mistress Queen Elizabeth.

The French indeed, from this period until the conclusion of the war before last, laid claim to, and actually possessed, Canada and Louisiana; comprehending all that extensive inland country reaching from Hudson's Bay on the north, to Mexico and the gulf of the same name on the south. But in that war, to which

America. which their perfidy and ambition gave riſe, they were not only driven from Canada and its dependencies, but obliged to relinquiſh all that part of Louiſiana lying on the eaſt ſide of the Miſſiſſippi, as related under the *Hiſtory of* BRITAIN. And thus our colonies were preſerved, ſecured, and extended ſo far, as to render it difficult to aſcertain the preciſe bounds of our empire in North America. To the northward we might have extended our claims quite to the pole itſelf, nor did any nation ſeem inclined to diſpute the property of this northernmoſt country with us. From that extremity we had a territory extending ſouthward to Cape Florida in the gulf of Mexico, N. Lat. 25°, and conſequently near 4000 miles long in a direct line. And to the weſtward our boundaries reached to nations unknown even to the Indians of Canada.

120 Vaſt extent of the Britiſh poſſeſſions before the late revolution.

Of the revolution that has ſince taken place, by which a great part of theſe territories has been ſeparated from the Britiſh empire, the hiſtory follows in the next article.

121 Riſe of the American republic.

AMERICA, United States of. Of the riſe and eſtabliſhment of this republic, which has given a new face to the weſtern world, a ſuccinct and impartial narrative ſhall in this article be attempted; in which, however, we cannot hope entirely to avoid errors, as they are perhaps unavoidable. The accounts from which the hiſtorian muſt derive his information are not yet cleared from the miſtakes of prejudice and the fabrications of party; when they differ, their comparative authenticity is with difficulty aſcertained; and they want above all that ſoftening which they can receive from time alone.

The beginning of every political eſtabliſhment is contemptible. Some few banditti taking refuge among the marſhes on the banks of the Tiber, laid the foundation of the Roman empire. The turbulence of ſome North Americans, and the blunders of ſome Britiſh ſtateſmen, gave birth to this new republic, which at a future period, it has been fancied, may perhaps ſurpaſs even the ſplendour of Rome.

122 State and character of the Britiſh colonies at the end of the year 1763.

The ſtate of the Britiſh colonies at the concluſion of the war in 1763, was ſuch as attracted the attention of all the politicians in Europe. Their flouriſhing condition at that period was remarkable and ſtriking: their trade had proſpered in the midſt of all the difficulties and diſtreſſes of a war in which they were ſo nearly and ſo immediately concerned. Their population continued on the increaſe, notwithſtanding the ravages and depredations that had been ſo fiercely carried on by the French, and the native Indians in their alliance. They abounded with ſpirited and active individuals of all denominations. They were fluſhed with the uncommon proſperity that had attended them in their commercial affairs and military tranſactions. Hence they were ready for all kind of undertakings, and ſaw no limits to their hopes and expectations.

As they entertained the higheſt opinion of their value and importance, and of the immenſe benefit that Britain derived from its connexion with them, their notions were adequately high in their own favour. They deemed themſelves, not without reaſon, entitled to every kindneſs and indulgence which the mother country could beſtow.

Although their pretenſions did not amount to a perfect equality of advantages and privileges in matters of commerce, yet in thoſe of government they thought themſelves fully competent to the taſk of conducting their domeſtic concerns with little or no interference from abroad. Though willing to admit the ſupremacy of Great Britain, they viewed it with a ſuſpicious eye, and with a marked deſire and intent ſpeedily to give it limitations. America.

Their improvements in all the neceſſary and uſeful arts did honour to their induſtry and ingenuity. Though they did not live in the luxury of Europe, they had all the ſolid and ſubſtantial enjoyments of life, and were not unacquainted with many of its elegancies and refinements.

A circumſtance much to their praiſe is, that notwithſtanding their peculiar addiction to thoſe occupations of which lucre is the ſole object, they were duly attentive to cultivate the field of learning; and they have ever ſince their firſt foundation been particularly careful to provide for the education of their riſing progeny.

Their vaſt augmentation of internal trade and external commerce, was not merely owing to their poſition and facility of communication with other parts; it aroſe alſo from their natural turn and temper, full of ſchemes and projects, ever aiming at new diſcoveries, and continually employed in the ſearch of means of improving their condition.

Their ambition carried them into every quarter from whence profit could be derived. There was ſcarcely any port of the American hemiſphere to which they had not extended their navigation. They were continually exploring new ſources of trade, and were found in every ſpot where buſineſs could be tranſacted.

To this extenſive and inceſſant application to commerce, they added an equal vigilance in the adminiſtration of their affairs at home. Whatever could conduce to the amelioration of the ſoil they poſſeſſed, to the progreſs of agriculture, or to the improvement of their domeſtic circumſtances, was attended to with ſo much labour and care, that it may be ſtrictly ſaid, that Nature had given them nothing of which they did not make the moſt.

In the midſt of this ſolicitude and toil in matters of buſineſs, the affairs of government were conducted with a ſteadineſs, prudence, and lenity, ſeldom experienced, and never exceeded, in the beſt regulated countries of Europe.

Such was the ſituation of the Britiſh colonies in general throughout North America, and of the New England provinces in particular, when the pacification above mentioned opened one of the moſt remarkable ſcenes that ever commanded the attention of the world.

123 Intrigues of the French.

The French, who have for many ages been the profeſſed and natural enemies of Britain, had long viewed, with equal envy and apprehenſion, the flouriſhing ſtate of thoſe colonies ſhe had founded in North America. No doubt at preſent ſubſiſts, that they began immediately after the peace of Paris to carry into execution the ſcheme they had formed for the ſeparation of the Britiſh colonies from the mother-country.

Conſcious that, whilſt a good underſtanding laſted between them, the ſuperiority muſt henceforth remain for

America. for ever on the ſide of Britain, it was only by their diſunion that France could hope to regain the ſituation and conſequence ſhe had formerly poſſeſſed in Europe.

The firſt ſteps ſhe took were to employ her ſecret emiſſaries in ſpreading diſſatisfaction among the Britiſh coloniſts; and the effects produced by her machinations were preciſely ſuch as they had intended and expected. The diſpoſition of the inhabitants of North America began gradually to alter from that warmth of attachment to the mother-country which had ſo peculiarly characterized them. They began to view her rather in the light of a ſovereign than that of a parent; and to examine, with a ſcrupulous nicety, the nature of thoſe ties that rendered them parts of her empire.

124 Taxes laid on goods imported into the colonies, and other obnoxious acts framed;

In March 1764, a bill was paſſed, by which heavy duties were laid on goods imported by the coloniſts from ſuch Weſt India iſlands as did not belong to Great Britain; at the ſame time that theſe duties were to be paid into the exchequer in ſpecie: and in the ſame ſeſſion, another bill was framed to reſtrain the currency of paper money in the colonies themſelves. Theſe acts coming ſo cloſe upon each other, threw the whole continent into the utmoſt ferment. Vehement remonſtrances were made to the miniſter, and every argument made uſe of that reaſon or ingenuity could ſuggeſt; but to no purpoſe. Their reaſoning, however, convinced a great number of people at home; and thus the American cauſe came to be conſidered as the cauſe of liberty.

125 which exaſperate the Americans.

The Americans, finding all argumentation vain, at laſt united in an agreement to import no more of the manufactures of Great Britain, but to encourage to the utmoſt of their power every thing of that kind among themſelves. Thus the Britiſh manufacturers alſo became a party againſt miniſtry, and did not fail to expreſs their reſentment in the ſtrongeſt terms; but the miniſtry were not to be ſo eaſily daunted, and therefore proceeded to the laſt ſtep of their intended plan, which was to lay on ſtamp duties throughout the continent. Previous to this, indeed, ſeveral regulations were paſſed in favour of the commerce of the colonies; but they had now imbibed ſuch unfavourable ſentiments of the Britiſh miniſtry, that they paid very little regard to any thing pretended to be done in their favour; or if theſe acts made any favourable impreſſion, it was quickly obliterated by the news of the ſtamp act. The reaſon given for this act ſo exceedingly obnoxious was, that a ſum might be raiſed ſufficient for the defence of the colonies againſt a foreign enemy; but this pretence was ſo far from giving any ſatisfaction to the Americans, that it excited their indignation to the utmoſt degree. They not only aſſerted that they were abundantly able to defend themſelves againſt any foreign enemy, but denied that the Britiſh parliament had any right to tax them at all.

126 The ſtamp act framed.

It would be ſuperfluous to enter into any arguments uſed by the contending parties on this important occaſion. It was evident that the matter was not to be decided by argument, but by force of arms; and the Britiſh miniſtry, too confident of the authority and power of this country, determined to carry on matters with a high hand, to terrify the coloniſts into an implicit ſubjection, or, if that would not do, to compel them to it by force. The ſtamp act, after a violent oppoſition in parliament, was paſſed, and its reception in America was ſuch as might have been expected. The news, and the act itſelf, firſt arrived at Boſton, where the bells were muffled and rung a doleful peal. The act was firſt hooked about the ſtreets, with a Death's head affixed to it, and ſtyled the "Folly of England, and the Ruin of America;" and afterwards publicly burnt by the enraged populace. The ſtamps themſelves were ſeized and detained, unleſs covered by men of war, or kept in fortified places; thoſe alſo were to receive the ſtamp duties were compelled to reſign their offices; and ſuch of the Americans as ſided with government on this occaſion had their houſes plundered and burnt. America.

Though theſe outrages were committed by the loweſt of the multitude, they were firſt connived at by thoſe of ſuperior rank, and the principles on which they were founded afterwards openly patroniſed by them; and the doctrine became general, and openly avowed, that Britain had no right whatever to tax the colonies without their own conſent.

It was now found abſolutely neceſſary either to yield to the Americans, by repealing the obnoxious ſtatutes, or to enforce them by arms. The ferment had diffuſed itſelf univerſally throughout the colonies. Virginia firſt, and after that all the reſt of the provinces, declared againſt the right of Britain to lay on taxes in America; and that every attempt to veſt others with this power beſides the king, or the governor of the province and his general aſſembly, was illegal, unconſtitutional, and unjuſt. Non-importation agreements were everywhere entered into; and it was even reſolved to prevent the ſale of any more Britiſh goods after the preſent year. American manufactures, though dearer, as well as inferior in quality to the Britiſh, were univerſally preferred. An aſſociation was entered into againſt eating of lamb, in order to promote the growth of wool; and the ladies with cheerfulneſs agreed to renounce the uſe of every ſpecies of ornament manufactured in Britain. Such a general and alarming confederacy determined the miniſtry to repeal ſome of the moſt obnoxious ſtatutes; and to this they were the more inclined by a petition from the firſt American congreſs, held at New York in the beginning of October 1765.

128 Repealed.

The ſtamp act was therefore repealed, to the univerſal joy of the Americans, and indeed to the general ſatisfaction of the Engliſh, whoſe manufactures had begun to ſuffer very ſeverely in conſequence of the American aſſociation againſt them. The diſputes on the ſubject without doors, however, where by no means ſilenced, but each party continued to argue the caſe as violently as ever. The celebrated Dr Benjamin Franklin was on this occaſion examined before the houſe of commons; and his opinion was in ſubſtance as follows:

129 Dr Franklin on this

"That the tax in queſtion was impracticable and conſequently ruinous. The very attempt had ſo far alienated the affection of the colonies, that they behaved in a leſs friendly manner towards the natives of England than before; conſidering the whole nation as conſpiring againſt their liberty, and the parliament as willing rather to oppreſs than to ſupport and aſſiſt them. America, in fact, did not ſtand in any need of Britiſh manufactures, having already begun to conſtruct ſuch as might be deemed abſolutely neceſſary, and that with ſuch

America. such success, as left no doubt of their arriving in a short time at perfection. The elegancies of dress had already been renounced for manufactures of the American kind, though much inferior; and the bulk of the people, consisting of farmers, were such as could in no way be affected by the want of British commodities, as having every necessary within themselves. Materials of all kinds were to be had in plenty: the wood was fine; flax grew in great abundance, and iron was everywhere to be met with."

The Doctor also insisted, "That the Americans had been greatly misrepresented; that they had been traduced as void of gratitude and affection to the parent state; than which nothing could be more contrary to truth. In the war of 1755 they had at their own expence, raised an army of 25,000 men; and in that of 1739 they assisted the British expeditions against South America with several thousand men, and had made many brave exertions against the French in North America. It was said, that the war of 1755 had been undertaken in defence of the colonies; but the truth was, that it originated from a contest about the limits between Canada and Nova Scotia, and in defence of the English rights to trade on the Ohio. The Americans, however, would still continue to act with their usual fidelity; and, were any war to break out in which they had no concern, would show themselves as ready as ever to assist the parent state to the utmost of their power, and would never fail to manifest their readiness in contributing to the emergencies of government, when called to do so in a regular and constitutional manner."

The ministry were conscious, that in repealing this obnoxious act, they yielded to the Americans; and therefore, to support, as they thought, the dignity of Great Britain, it was judged proper to publish a declaratory bill, setting forth the authority of the mother-country over her colonies, and her power to bind them by laws and statues *in all cases whatever*. This much diminished the joy with which the repeal of the stamp act was received in America. It was considered as a proper reason to enforce any claims equally prejudicial with the stamp act, which might hereafter be set up; a spirit of jealousy pervaded the whole continent, and a strong party was formed, watchful on every occasion to guard against the supposed encroachments of the British power.

130 Declaratory bill gives offence in America.

It was not long before an occasion offered, in which the Americans manifested a spirit of absolute independency; and that, instead of being bound by the British legislature in all cases, they would not be controlled by it in the most trivial affairs. The Rockingham ministry had passed an act, providing the troops stationed in different parts of the colonies with such accommodations as were necessary for them. The assembly of New York, however, took upon them to alter the mode of execution prescribed by the act of parliament, and to substitute one of their own. This gave very great offence to the new ministry, and rendered them, though composed of those who had been active against the stamp bill, less favourable to the colonies than in all probability they would have otherwise been. An unlucky circumstance at the same time occurred, which threw every thing once more into confusion. One of the new ministry, Mr Charles Townshend, having declared that he could find a way of taxing the Americans without giving them offence, was called upon to propose his plan. This was by imposing a duty upon tea, paper, painters colours, and glass imported into America. The undutiful behaviour of the New York assembly, and that of Boston, which had proceeded in a similar manner, caused this bill to meet with less opposition than otherwise it might have done. As a punishment to the refractory assemblies, the legislative power was taken from that of New York, until it should fully comply with the terms of the act. That of Boston at last submitted with reluctance. The bill for the new taxes was quickly passed, and sent to America in 1768.

131 Assembly of New York disobeys act of parliament.

America. 132 Mr Townshend's plan to tax America.

A ferment much greater than that occasioned by the stamp act now took place throughout the continent. The populace renewed their outrages, and those of superior station entered into regular combinations against us. Circular letters were sent from Massachusets colony to all the rest, setting forth the injustice and impropriety of the behaviour of the British legislature. Meetings were held in all the principal towns, in which it was proposed to lessen the consumption of foreign manufactures, by giving proper encouragement to their own. Continual disputes ensued betwixt the governors and general assemblies of their provinces, which were much heightened by a letter to Lord Shelburne from Governor Bamand of Massachusets Bay, containing complaints of the people he governed. The assembly exasperated to the highest degree, charged their governor with having misrepresented them to the court of Britain, required him to produce copies of the letters he had sent; and, on his refusal, wrote letters to the English ministry, accusing him of misrepresentation and partiality, complaining at the same time most grievously of the proceedings of parliament, as utterly subversive of the liberties of America, and the rights of British subjects.

133 Is received there with still greater indignation than even the stamp act.

134 Quarrel between the people of Massachusets Bay and their governor.

The governor, at a loss how to defend himself, prorogued the assembly; and, in his speech on the occasion, gave a loose to his resentment, accusing the members of ambitious designs, incompatible with those of dutiful and loyal subjects. To counteract the circular letter of the province of Massachusets Bay, Lord Hillsborough, secretary for the American department, sent another to the governor of the different colonies, reprobating the other as full of misrepresentation, and tending to excite a rebellion against the authority of the parent state.

Matters now hastened to a crisis. The governor had been ordered to proceed with vigour, and by no means to show any disposition to yield to the people as formerly. In particular, they were required to rescind that resolution by which they had written the circular letter above mentioned; and, in case of a refusal, it was told them that they would be dissolved. As this letter had been framed by the resolution of a former house, they desired, after a week's consultation, that a recess might be granted to consult with their constituents; but this being refused, they came to a determination, 92 against 17, to adhere to the resolution which produced the circular letter. At the same time a letter was sent to Lord Hillsborough, and a message to the governor, in justification of their proceedings. In both they expressed themselves with such freedom

135 He requires the assembly to rescind their circular letters;

136 which they refuse.

to

America. as was by no means calculated to accord with the ſentiments of thoſe in power. They inſiſted that they had a right to communicate their ſentiments to their fellow-ſubjects upon matters of ſuch importance; complained of the requiſition to reſcind the circular letter as unconſtitutional and unjuſt; and particularly inſiſted, that they were repreſented as harbouring ſeditious deſigns, when they were doing nothing but what was lawful and right. At the ſame time, they condemned the late acts of parliament as highly oppreſſive, and ſubverſive of liberty. The whole was concluded by a liſt of accuſations againſt their governor, repreſenting him as unfit to continue in his ſtation, and petitioning the king for his removal from it.

137 Accuſe their governor, and petition for his removal.

Theſe proceedings were followed by a violent tumult at Boſton. A veſſel belonging to a capital trader had been ſeized in conſequence of his having neglected ſome of the new regulations; and being taken under the protection of a man of war at that time lying in the harbour, the populace attacked the houſes of the commiſſioners of exciſe, broke their windows, deſtroyed the collector's boats, and obliged the cuſtomhouſe officers to take refuge in Caſtle William, ſituated at the entrance of the harbour.

138 A tumult at Boſton.

The governor now took the laſt ſtep in his power to put a ſtop to the violent proceedings of this aſſembly, by diſſolving it entirely; but this was of little moment. Their behaviour had been highly approved by the other colonies, who had written letters to them expreſſive of their approbation. After the diſſolution of the aſſembly, frequent meetings of the people were held in Boſton, which ended in a remonſtrance to the governor, to the ſame purpoſe as ſome of the former; but concluding with an extraordinary requeſt, that he would take upon him to order the king's ſhips out of the harbour.

139 The aſſembly diſſolved.

While the diſpoſition of the Boſtonians was thus going on from bad to worſe, news arrived that the agent for the colony had not been allowed to deliver their petition to the king; it having been objected, that the aſſembly without the governor was not ſufficient authority. This did not contribute to allay the ferment; and it was further augmented by the news that a number of troops had been ordered to repair to Boſton, to keep the inhabitants in awe.

140 The diſturbances ſtill increaſe.

141 Some troops ordered to Boſton.

A dreadful alarm now took place. The people called on the governor to convene a general aſſembly, in order to remove the fears of the military; who they ſaid were to be aſſembled to overthrow their liberties, and force obedience to laws to which they were entirely averſe. The governor replied that it was no longer in his power to call an aſſembly; having, in his laſt inſtructions from England, been required to wait the king's orders, the matter being then under conſideration at home. Being thus refuſed, the people took upon themſelves the formation of an aſſembly, which they called a *Convention*. The proceedings and reſolutions of this were conformable to their former behaviour; but now they went a ſtep farther, and, under pretence of an approaching rupture with France, ordered the inhabitants to put themſelves in a poſture of defence againſt any ſudden attack of an enemy; and circular letters were directed to all the towns in the province, acquainting them with the reſolutions that had been taken in the capital, and exhorting them to proceed in the ſame manner. The town of Hatfield alone refuſed its concurrence; but this ſerved only to expoſe them to the cenſure and contempt of the reſt. The convention, however, thought proper to aſſure the governor of their pacific intentions, and renewed their requeſt that an aſſembly might be called; but being refuſed any audience, and threatened with being treated as rebels, they at laſt thought proper to diſſolve of themſelves, and ſent over to Britain a circumſtantial account of their proceedings, with the reaſon of their having aſſembled in the manner already mentioned.

142 The people form an aſſembly called a *Convention*;

143 which diſcover and endeavours to vindicate their own conduct.

The expoſed troops arrived on the very day on which the convention broke up, and had ſome houſes in the town fitted up for their reception. Their arrival had a conſiderable influence on the people, and for ſome time ſeemed to put a ſtop to the diſturbances; but the ſeeds of diſcord had now taken ſuch deep root, that it was impoſſible to quench the flame. The late outrageous behaviour in Boſton had given the greateſt offence in England; and, notwithſtanding all the efforts of oppoſition, an addreſs from both houſes of parliament was preſented to the king; in which the audacious behaviour of the colony of Maſſachuſets Bay was ſet forth in the moſt ample manner, and the moſt vigorous meaſures recommended for reducing them to obedience. The Americans, however, continued ſtedfaſt in the ideas they had adopted. Though the troops had for ſome time quieted the diſturbances, yet the calm continued no longer than they appeared reſpectable on account of their number; but as ſoon as this was diminiſhed by the departure of a large detachment, the remainder were treated with contempt, and it was even reſolved to expel them altogether. The country people took up arms for this purpoſe, and were to have aſſiſted their friends in Boſton; but before the plot could be put in execution, an event happened which put an end to every idea of reconciliation betwixt the contending parties.

144 Both houſes of parliament addreſs the king againſt America.

On the 5th of March 1770, a ſcuffle happened between ſome ſoldiers and a party of the town's people. The inhabitants poured in from all quarters to the aſſiſtance of their fellow-citizens; a violent tumult enſued, during which the military fired among the mob, killing and wounding ſeveral of them. The whole province now roſe in arms, and the ſoldiers were obliged to retire to Caſtle William to prevent their being cut in pieces. In other reſpects, the determinations of the Americans continued, if poſſible, more firm than ever, until at laſt government, determined to act with vigour, and at the ſame time to behave with as much condeſcenſion as poſſible, repealed all the duties lately laid on, that on tea alone excepted. This was left on purpoſe to maintain the dignity of the crown of Britain; and it was thought that it could not be productive of any diſcontent in America, as being an affair of very little moment, the produce of which was not expected to exceed 16,000l. The oppoſition, however, were ſtrenuous in their endeavours to get this tax likewiſe abrogated; inſiſting, that the Americans would conſider it only as an inlet to others; and that the repeal of all the reſt, without this, would anſwer no great purpoſe. The event ſhowed that their opinion was well founded. The Americans oppoſed the tea tax with the ſame violence as they had done all the reſt;

145 Some people killed by the ſoldiers in a mob at Boſton.

146 All the duties except ing that on tea taken off;

147 [illegible] violently oppoſed as all the reſt.

America. rest: and at last, on the news that salaries had been settled on the justices of the superior court of Boston, the governor was addressed on the subject; the measure was condemned in the strongest terms; and a committee, selected out of the several districts of the colony, appointed to inquire into it.

148 Assembly of Massachusets bay formally deny the British right of taxation. The new assembly proceeded in the most formal manner to disavow the supremacy of the British legislature; accused the parliament of Britain of having violated the natural rights of the Americans in a number of instances. Copies of the transactions of this assembly were transmitted to every town in Massachusets, exhorting the inhabitants to rouse themselves, and exert every nerve in opposition to the iron hand of oppression, which was daily tearing the choicest fruits from the fair tree of liberty. The disturbances were also greatly heightened by an accidental discovery that Mr Hutchinson, governor of Massachusets Bay, had written several confidential letters to people in power in England, complaining of the behaviour of the province, recommending vigorous measures against them, and, among other things, asserting, that "there must be an abridgement of what is called British liberty." Letters of this kind had somehow or other fallen into the hands of the agent for the colony at London. They were immediately transmitted to Boston, where the assembly was sitting, by whom they were laid before the governor, who was thus reduced to a very mortifying situation. Losing every idea of respect or friendship for him as their governor, they instantly despatched a petition to the king, requesting him to remove the governor and deputy-governor from their places; but to this they not only received no favourable answer, but the petition itself was declared groundless and scandalous.

149 Gov. Hutchison's letters to British ministry discovered.

150 The petition against him refused.

151 Tea destroyed at Boston; Matters were now ripe for the utmost extremities on the part of the Americans; and they were brought on in the following manner: Though the colonists had entered into a non-importation agreement against tea as well as all other commodities from Britain, it had nevertheless found its way into America, though in smaller quantities than before. This was sensibly felt by the East India Company, who had now agreed to pay a large sum annually to government; in recompense for which compliance, and to make up their losses in other respects, they were empowered to export their tea free from any duty payable in Britain; and in consequence of this permission, several ships freighted with the commodity were sent to North America, and proper agents appointed for disposing of it. The Americans now perceiving that the tax was thus likely to be enforced whether they would or not, determined to take every possible method to prevent the tea from being landed, as well knowing that it would be impossible to hinder the sale should the commodity once be brought on shore. For this purpose the people assembled in great numbers, forcing those to whom the tea was consigned to resign their offices, and to promise solemnly never to resume them; and committees were appointed to examine the accounts of merchants, and make public lists, declaring such as would not take them enemies to their country. Nor was this behaviour confined to the colony of Massachusets Bay; the rest of the provinces entered into the contest with the same warmth, and manifested the same resolution America. to oppose the mother country.

In the midst of this confusion three ships laden with tea arrived at Boston; but so much were the captains alarmed at the disposition which seemed to prevail among the people, that they offered, providing they could obtain the proper discharges from the tea consignees, customhouse, and governor, to return to Britain without landing their cargoes. The parties concerned, however, though they durst not order the tea to be landed, refused to grant the discharges required. The ships, therefore, would have been obliged to remain in the harbour; but the people, apprehensive that if they remained there the tea would be landed in small quantities, and disposed of in spite of every endeavour to prevent it, resolved to destroy it at once. This resolution was executed with equal speed and secrecy. The very evening after the above mentioned discharges had been refused, a number of people, dressed like Mohawk Indians, boarded the ships, and threw into the sea their whole cargoes, consisting of 342 chests of tea; after which they retired without making any further disturbance, or doing any more damage. No tea was destroyed in other places, though the same spirit was everywhere manifested. At Philadelphia the pilots were enjoined not to conduct the vessels up the river; and at New York, though the governor caused some tea to be landed under the protection of a man of war, he was obliged to deliver it up to the custody of the people, to prevent its being sold.

152 and refused admittance in other places.

The destruction of the tea at Boston, which happened in November 1773, was the immediate prelude to the disasters attending civil discord. Government finding themselves everywhere insulted and despised, resolved to enforce their authority by all possible means; and as Boston had been the principal scene of the riots and outrages, it was determined to punish that city in an exemplary manner. Parliament was acquainted by a message from his majesty with the undutiful behaviour of the city of Boston, as well as of all the colonies, recommending at the same time the most vigorous and spirited exertions to reduce them to obedience. The parliament in its address promised a ready compliance; and indeed the Americans, by their outrageous behaviour, had now lost many of their partisans. It was proposed to lay a fine on the town of Boston equal to the price of the tea which had been destroyed, and to shut up its port by armed vessels until the refractory spirit of the inhabitants should be subdued; which it was thought must quickly yield, as a total stop would thus be put to their trade. The bill was strongly opposed on the same grounds that the other had been; and it was predicted, that instead of having any tendency to reconcile or subdue the Americans, it would infallibly exasperate them beyond any possibility of reconciliation. The petitions against it, presented by the colony's agent, pointed out the same consequence in the strongest terms, and in the most positive manner declared that the Americans never would submit to it; but such was the infatuation attending every rank and degree of men, that it never was imagined the Americans would dare to resist the parent state openly, but would in the end submit implicitly to her commands. In this confidence a third bill was proposed

153 Punishment of Boston resolved on.

154 Arguments and petitions against it.

America.

proposed for the impartial administration of justice on such persons as might be employed in the suppression of riots and tumults in the province of Massachusets Bay. By this act it was provided, that should any persons acting in that capacity be indicted for murder, and not able to obtain a fair trial in the province, they might be sent by the governor to England, or to some other colony, if necessary, to be tried for the supposed crime.

155 Act for the impartial administration of justice.

156 Quebec bill.

These three bills having passed so easily, the ministry proposed a fourth, relative to the government of Canada; which, it was said, had not yet been settled on any proper plan. By this bill the extent of that province was greatly enlarged; its affairs were put under the direction of a council into which Roman Catholics were to be admitted; the Roman Catholic clergy were secured in their possessions and the usual perquisites from those of their own profession. The council above mentioned were to be appointed by the crown, to be removeable at its pleasure; and to be invested with every legislative power excepting that of taxation.

157 These acts exasperate the Americans.

No sooner were these laws made known in America, than they cemented the union of the colonies almost beyond any possibility of dissolving it. The assembly of Massachusets Bay had passed a vote against the judges accepting salaries from the crown, and put the question, Whether they would accept them as usual from the general assembly? Four answered in the affirmative; but Peter Oliver the chief justice refused. A petition against him, and an accusation, were brought before the governor; but the latter refused the accusation, and declined to interfere in the matter: but as they still insisted for what they called justice against Mr Oliver, the governor thought proper to put an end to the matter by dissolving the assembly.

158 Resentment occasioned by the port bill.

In this situation of affairs a new alarm was occasioned by the news of the port bill. This had been totally unexpected, and was received with the most extravagant expressions of displeasure among the populace; and while these continued, the new governor, General Gage, arrived from England. He had been chosen to this office on account of his being well acquainted in America, and generally agreeable to the people; but human wisdom could not now point out a method by which the flame could be allayed. The first act of his office as governor was to remove the assembly to Salem, a town 17 miles distant, in consequence of the late act. When this was intimated to the assembly, they replied, by requesting him to appoint a day of public humiliation for deprecating the wrath of heaven, but met with a refusal. When met at Salem, they passed a resolution, declaring the necessity of a general congress composed of delegates from all the provinces, in order take the affairs of the colonies at large into consideration; and five gentlemen, remarkable for their opposition to the British measures, were chosen to represent that of Massachusets Bay. They then proceeded with all expedition to draw up a declaration, containing a detail of the grievances they laboured under, and the necessity of exerting themselves against lawless power: they set forth the disregard shown to their petitions, and the attempts of Great Britain to destroy their ancient constitution; and concluded with exhorting the inhabitants

159 Proceedings of the general assembly met at Salem.

of the colony to obstruct, by every method in their power, such evil designs, recommending at the same time a total renunciation of every thing imported from Great Britain till a redress of grievances could be procured.

America.

Intelligence of this declaration was carried to the governor on the very day that it was completed; on which he dissolved the assembly. This was followed by an address from the inhabitants of Salem in favour of those of Boston, and concluding with these remarkable words: "By shutting up the port of Boston, some imagine that the course of trade might be turned hither, and to our benefit; but nature, in the formation of our harbour, forbids our becoming rivals in commerce with that convenient mart; and were it otherwise, we must be dead to every idea of justice, lost to all feelings of humanity, could we indulge one thought to seize on wealth, and raise our fortunes on the ruin of our suffering neighbours."

160 Generality of the people of Salem in favour of those of Boston.

It had been fondly hoped by the ministerial party at home, that the advantages which other towns of the colony might derive from the annihilation of the trade of Boston would make them readily acquiesce in the measure of shutting up that port, and rather rejoice in it than otherwise; but the words of the address above mentioned seemed to preclude all hope of this kind; and subsequent transactions soon manifested it to be totally vain. No sooner did intelligence arrive of the remaining bills passed in the session of 1774, than the cause of Boston became the cause of all the colonies. The port bill had already occasioned violent commotions throughout them all. It had been reprobated in provincial meetings, and resistance even to the last had been recommended against such oppression. In Virginia, the first of June, the day on which the port of Boston was to be shut up, was held as a day of humiliation, and public intercession in favour of America was enjoined. The style of the prayer enjoined at this time was, that "God would give the people one heart and one mind, firmly to oppose every invasion of the American rights." The Virginians, however, did not content themselves with acts of religion. They recommended in the strongest manner a general congress of all the colonies, as fully persuaded that an attempt to tax any colony in an arbitrary manner was in reality an attack upon them all, and must ultimately end in the ruin of them all.

161 The cause of Boston espoused by all the rest of the colonies.

The provinces of New York and Pennsylvania, however, were less sanguine than the rest, being so closely connected in the way of trade with Great Britain, that the giving it up entirely appeared a matter of the most serious magnitude, and not to be thought of but after every other method had failed. The intelligence of the remaining bills respecting Boston, however, spread a fresh alarm throughout the continent, and fixed those who had seemed to be the most wavering. The proposal of giving up all commercial intercourse with Britain was again proposed; contributions for the inhabitants of Boston were raised in every quarter; and they every day received addresses commending them for the heroic courage with which they sustained their calamity.

162 The Americans firmly united in their opposition to Britain.

The Bostonians on their part were not wanting in their endeavours to promote the general cause. An agreement was framed, which, in imitation of former

America. times, they called a Solemn League and Covenant. By this the ſubſcribers moſt religiouſly bound themſelves to break off all communication with Britain after the expiration of the month of Auguſt enſuing, until the obnoxious acts were repealed; at the ſame time they engaged neither to purchaſe nor uſe any goods imported after that time, and to renounce all connexion with thoſe who did, or who refuſed to ſubſcribe to this covenant; threatening to publiſh the names of the refractory, which at this time was a puniſhment by no means to be deſpiſed. Agreements of a ſimilar kind were almoſt inſtananeouſly entered into throughout all America. General Gage indeed attempted to counteract the covenant by a proclamation, wherein it was declared an illegal and traiterous combination, threatening with the pains of law ſuch as ſubſcribed or countenanced it. But matters were too far gone for his proclamations to have any effect. The Americans retorted the charge of illegality on his own proclamation, and inſiſted that the law allowed ſubjects to meet in order to conſider of their grievances, and aſſociate for relief from oppreſſion.

163 Solemn league and covenant formed at Boſton.

164 The governor attempts in vain to counteract it by proclamation.

Preparations were now made for holding the general congreſs ſo often propoſed. Philadelphia, as being the moſt central and conſiderable town, was pitched upon for the place of its meeting. The delegates of whom it was to be compoſed were choſen by the repreſentatives of each province, and were in number from two to ſeven for each colony, though no province had more than one vote. The firſt congreſs which met at Philadelphia, in the beginning of September 1774, conſiſted of 51 delegates. The novelty and importance of the meeting excited an univerſal attention; and their tranſactions were ſuch as could not but tend to render them reſpectable.

165 Congreſs meets at Philadelphia.

166 Account of its tranſactions.

The firſt act of congreſs was an approbation of the conduct of Maſſachuſets Bay, and an exhortation to continue in the ſame ſpirit with which they had begun. Supplies for the ſuffering inhabitants (whom indeed the operation of the port bill had reduced to great diſtreſs) were ſtrongly recommended; and it was declared, that in caſe of attempts to enforce the obnoxious acts by arms, all America ſhould join to aſſiſt the town of Boſton; and ſhould the inhabitants be obliged, during the courſe of hoſtilities, to remove farther up the country, the loſſes they might ſuſtain ſhould be repaired at the public expence.

They next addreſſed General Gage by letter; in which, having ſtated the grievances of the people of Maſſachuſets colony, they informed him of the fixed and unalterable determination of all the other provinces to ſupport their brethren, and to oppoſe the Britiſh acts of parliament; that they themſelves were appointed to watch over the liberties of America; and entreated him to deſiſt from military operations, leſt ſuch hoſtilities might be brought on as would fruſtrate all hopes of reconciliation with the parent ſtate.

The next ſtep was to publiſh a declaration of their rights. Theſe they ſummed up in the rights belonging to Engliſhmen; and particularly inſiſted, that as their diſtance rendered it impoſſible for them to be repreſented in the Britiſh parliament, their provincial aſſemblies, with the governor appointed by the king, conſtituted the only legiſlative power within each province. They would, however, conſent to ſuch acts of parliament as were evidently calculated merely for the regulation of commerce, and ſecuring to the parent ſtate the benefits of the American trade; but would never allow that they could impoſe any tax on the colonies, for the purpoſe of raiſing a revenue, without ther conſent. They proceeded to reprobate the intention of each of the new acts of parliament; and inſiſted on all the rights they had enumerated as being unalienable, and what none could deprive them of. The Canada act they particularly pointed out as being extremely inimical to the colonies, by whoſe aſſiſtance it had been conquered; and they termed it, "An act for eſtabliſhing the Roman Catholic religion in Canada, aboliſhing the equitable ſyſtem of Engliſh laws, and eſtabliſhing a tyranny there." They further declared in favour of a non-importation and non-conſumption of Britiſh goods until the acts were repealed by which duties were impoſed upon tea, coffee, wine, ſugar, and molaſſes, imported into America, as well as the Boſton port act, and the three others paſſed in the preceding ſeſſion of parliament. The new regulations againſt the importation and conſumption of Britiſh commodities were then drawn up with great ſolemnity; and they concluded with returning the warmeſt thanks to thoſe members of parliament who had with ſo much zeal, though without any ſucceſs, oppoſed the obnoxious acts of parliament. America.

Their next proceedings were to frame a petition to the king, an addreſs to the Britiſh nation, and another to the colonies; all of which were ſo much in the uſual ſtrain of American language for ſome time paſt, that it is needleſs to enter into any particular account of them. It is ſufficient to ſay, that they were all drawn up in a maſterly manner, and ought to have impreſſed the people of this country with a more favourable idea of the Americans than they could at that time be induced to entertain.

All this time the diſpoſitions of the people had correſponded with the warmeſt wiſhes of congreſs. The firſt of June had been kept as a faſt, not only throughout Virginia where it was firſt propoſed, but through the whole continent. Contributions for the diſtreſſes of Boſton had been raiſed throughout America, and people of all ranks ſeemed to be particularly touched with them. Even thoſe who ſeemed to be moſt likely to derive advantages from them took no opportunity, as had been already inſtanced in the caſe of Salem. The inhabitants of Marblehead alſo ſhowed a noble example of magnanimity in the preſent caſe. Though ſituated in the neighbourhood of Boſton, and moſt likely to derive benefit from their diſtreſſes, they did not attempt to take any advantage, but generouſly offered the uſe of their harbour to the Boſtonians, as well as their wharfs and warehouſes, free of all expence. In the mean time the Britiſh forces at Boſton were continually increaſed in number, which greatly augmented the general jealouſy and diſaffection; the country were ready to riſe at a moment's warning: and the experiment was made by giving a falſe alarm that the communication between the town and country was to be cut off, in order to reduce the former by famine to a compliance with the acts of parliament. On this intelligence the country people aſſembled in great numbers, and could not be ſatisfied till they had ſent meſſengers into the city to inquire into the truth

167 Generoſity of the inhabitants of Marblehead to Boſton.

168 Extreme attachment of the country people to the Boſtonians.

America. truth of the report. These messengers were enjoined to inform the town's people, that if they should be so pusillanimous as to make a surrender of their liberties, the province would not think itself bound by such examples; and that Britain, by breaking their original charter, had annulled the contract subsisting between them, and left them to act as they thought proper.

The people in every other respect manifested their inflexible determination to adhere to the plan they had so long followed. The new counsellors and judges were obliged to resign their offices, in order to preserve their lives and properties from the fury of the multitude. In some places they shut up the avenues to the court houses; and when required to make way for the judges, replied, that they knew of none but such as were appointed by the ancient usage and custom of the province. Everywhere they manifested the most ardent desire of learning the art of war; and every individual who could bear arms, was most assiduous in procuring them, and learning their exercise.

169 Gen. Gage fortifies Boston Neck; Matters at last proceeded to such a height, that General Gage thought proper to fortify the neck of land which joins the town of Boston to the continent. This, though undoubtedly a prudent measure in his situation, was exclaimed against by the Americans in the most vehement manner; but the general, instead of giving ear to their remonstrances, deprived them of all power of acting against himself, by seizing the provincial powder, ammunition, and military stores, at Cambridge and Charlestown. This excited such indignation, that it was with the utmost difficulty the people could be restrained from marching to Boston and attacking the troops. Even in the town itself, the company of cadets that used to attend him disbanded themselves, and returned the standard he had as usual presented them with on his accession to the government. This was occasioned by his having deprived the celebrated John Hancock, afterwards president of the congress, of his commission as colonel of the cadets. A similar instance happened of a provincial colonel having accepted a seat in the new council; upon which 24 officers of his regiment resigned their commissions in one day.

170 and seizes the military stores belonging to the province.

171 Opposition to the British parliament still increases. In the mean time a meeting was held of the principal inhabitants of the towns adjacent to Boston. The purport of this was publicly to renounce all obedience to the late acts of parliament, and to form an engagement to indemnify such as should be prosecuted on that account; the members of the new council were declared violators of the rights of their country; all ranks and degrees were exhorted to learn the use of arms; and the receivers of the public revenue were ordered not to deliver it into the treasury, but retain it in their own hands till the constitution should be restored, or a provincial congress dispose of it otherwise.

A remonstrance against the fortifications on Boston Neck was next prepared; in which, however, they still pretended their unwillingness to proceed to any hostile measures; asserting only as usual their firm determination not to submit to the acts of parliament they had already so much complained of. The governor, to restore tranquillity, if possible, called a general assembly; but so many of the council had resigned their seats, that he was induced to countermand its sitting

172 A general assembly called and dissolved by proclamation. by proclamation. This measure, however, was deemed illegal; the assembly met at Salem; and after waiting a day for the governor, voted themselves into a provincial congress, of which Mr Hancock was chosen president. A committee was instantly appointed, who waited on the governor with a remonstrance concerning the fortifications on Boston Neck; but nothing of consequence took place, both parties mutually criminating each other. The winter was now coming on, and the governor, to avoid quartering the soldiers upon the inhabitants, proposed to erect barracks for them; but the select men of Boston compelled the workmen to desist. Carpenters were sent for to New York, but they were refused; and it was with the utmost difficulty that he could procure winter lodgings for his troops. Nor was the difficulty less in procuring clothes; as the merchants of New York told him, that "they would never supply any article for the benefit of men sent as enemies to their country."

America.

173 Gen. Gage meets with great difficulties in accommodating his troops.

174 The Americans make preparations for war. This disposition, known to be almost universal throughout the continent, was in the highest degree satisfactory to congress. Every one saw that the ensuing spring was to be the season of commencing hostilities, and the most indefatigable diligence was used by the colonies to be well provided against such a formidable enemy. A list of all the fencible men in each colony was made out, and especially of those who had served in the former war; of whom they had the satisfaction to find that two-thirds were still alive and fit to bear arms. Magazines of arms were collected, and money was provided for the payment of troops. The governors in vain attempted to put a stop to these proceedings by proclamations; the fatal period was now arrived; and the more the servants of government attempted to repress the spirit of the Americans, the more violent it appeared.

175 Distress of the inhabitants of Boston. In the mean time the inhabitants of Boston were reduced to great distress. The British troops, now distinguished by the name of the *enemy*, were absolutely in possession of it; the inhabitants were kept as prisoners, and might be made accountable for the conduct of the whole colonies; and various measures were contrived to relieve the latter from such a disagreeable situation. Sometimes it was thought expedient to remove the inhabitants altogether; but this was impracticable without the governor's consent. It was then proposed to set fire to the town at once, after valuing the houses and indemnifying the proprietors; but this being found equally impracticable, it was resolved to wait some other opportunity, as the garrison was not very numerous, and, not being supplied with necessaries by the inhabitants, might soon be obliged to leave the place. The friends of British government indeed attempted to do something in opposition to the general voice of the people; but after a few ineffectual meetings and resolutions they were utterly silenced, and obliged to yield to the superior number of their adversaries.

176 Military stores seized by the Americans. Matters had now proceeded so far that every idea of reconciliation or friendship with Britain was lost. The Americans, therefore, without ceremony, began to seize on the military stores and ammunition belonging to government. This first commenced at Newport in Rhode Island, where the inhabitants carried off 40 pieces of cannon appointed for the protection of the place;

America. place; and on being aſked the reaſon of this proceeding, they replied, that the people had ſeized them leſt they ſhould be made uſe of againſt themſelves. After this the aſſembly met, and reſolved that ammunition and warlike ſtores ſhould be purchaſed with the public money.

New Hampſhire followed the example of Rhode Iſland, and ſeized a ſmall fort for the ſake of the powder and military ſtores it contained. In Pennſylvania, however, a convention was held, which expreſſed an earneſt deſire of reconciliation with the mother country; though, at the ſame time, in the ſtrongeſt manner declaring, that they were reſolved to take up arms in defence of their juſt rights, and defend to the laſt their oppoſition to the late acts of parliament; and the people were exhorted to apply themſelves with the greateſt aſſiduity to the proſecution of ſuch manufactures as were neceſſary for their defence and ſubſiſtence, ſuch as ſalt, ſaltpetre, gunpowder, ſteel, &c. This was the univerſal voice of the colonies, New York only excepted. The aſſembly of that province, as yet ignorant of the fate of their laſt remonſtrance, refuſed to concur with the other colonies in their determination to throw off the Britiſh yoke: their attachment, however, was very faint, and by the event it appeared that a perſeverance in the meaſures which the miniſtry had adopted was ſufficient to unite them to the reſt.

As the diſturbances had originated in the province of Maſſachuſets Bay, and there continued all along with the greateſt violence, ſo this was the province where the firſt hoſtilities were formally commenced. In the beginning of February the provincial congreſs met at Cambridge; and as no friends to Britain could now find admittance to that aſſembly, the only conſideration was how to make proper preparations for war. Expertneſs in military diſcipline was recommended in the ſtrongeſt manner, and ſeveral military inſtitutions enacted; among which that of the *minute-men* was one of the moſt remarkable. Theſe were choſen from the moſt active and expert among the militia; and their buſineſs was to keep themſelves in conſtant readineſs at the call of their officers; from which perpetual vigilance they derived their title.—It was now eaſily ſeen that a ſlight occaſion would bring on hoſtilities, which could not but be attended with the moſt violent and certain deſtruction to the vanquiſhed party: for both were ſo much exaſperated by a long courſe of reproaches and literary warfare, that they ſeemed to be filled with the utmoſt inveteracy againſt each other.

177 Maſſachuſets aſſembly recommend preparations for war.

On the 26th of February, General Gage having been informed that a number of field-pieces had been brought to Salem, deſpatched a party to ſeize them. Their road was obſtructed by a river, over which was a drawbridge. This the people had pulled up, and refuſed to let down: upon which the ſoldiers ſeized a boat to carry them over, but the people cut out her bottom. Hoſtilities would immediately have commenced, had it not been for the interpoſition of a clergyman, who repreſented to the [illegible] on the one hand, the folly of oppoſing ſuch numbers; and to the people on the other that while they were [illegible] the military could not execute their deſign, ſo that they might without any fear [illegible] the quiet poſſeſſion of the drawbridge. This was complied with; and the ſoldiers, after having remained for ſome time at the bridge, returned without executing their orders. America.

The next attempt, however, was attended with more ſerious conſequences. General Gage, having been informed that a large quantity of ammunition and military ſtores had been collected at Concord, about 20 miles from Boſton, and where the provincial congreſs was ſitting, ſent a detachment, under the command of Colonel Smith and Major Pitcairn, to deſtroy the ſtores, and, as was reported, to ſeize Meſſrs Hancock and Adams, the leading men of the congreſs. They ſet out before daybreak, on the 19th of April, marching with the utmoſt ſilence, and ſecuring every one they met on the road, that they might not be diſcovered. But notwithſtanding all their care, the continual ringing of bells and firing of guns as they went along, ſoon gave them notice that the country was alarmed. About five in the morning they had reached Lexington, 15 miles from Boſton, where the militia of the place were exerciſing. An officer called out to them to diſperſe; but ſome ſhots, it is ſaid, being at that moment fired from a houſe in the neighbourhood, the military made a diſcharge, which killed and wounded ſeveral of the militia. The detachment then proceeded to Concord, where, having deſtroyed the ſtores, they were encountered by the Americans; and a ſcuffle enſued, in which ſeveral fell on both ſides. The purpoſe of their expedition being thus accompliſhed, it was neceſſary for the king's troops to retreat, which they did through a continual fire kept up upon them from Concord to Lexington. Here their ammunition was totally expended; and they would have been unavoidably cut off, had not a conſiderable reinforcement commanded by Lord Percy luckily met them. The Americans, however, continued their attack with great fury; and the Britiſh would ſtill have been in the utmoſt danger, had it not been for two field pieces which Lord Percy had brought with him. By theſe the impetuoſity of the Americans was checked, and the Britiſh made good their retreat to Boſton with the loſs of 250 killed and wounded: that of the Americans was about 60.

178 Skirmiſh at Lexington.

By this engagement the ſpirits of the Americans were ſo raiſed, that they meditated nothing leſs than the total expulſion of the Britiſh troops from Boſton. An army of 20,000 men was aſſembled, who formed a line of encampment from Roxbury to Myſtic, through a ſpace of about 30 miles; and here they were ſoon after joined by a large body of Connecticut troops, under General Putnam, an old officer of great bravery and experience. By this formidable force was the town of Boſton now kept blocked up. General Gage, however, had ſo ſtrongly fortified it, that the enemy, powerful as they were, durſt not make an attack; while, on the other hand, his force was by far too inſignificant to meet ſuch an enemy in the field. But towards the end of May, a conſiderable reinforcement having arrived, with Generals Howe, Burgoyne, and Clinton, he was ſoon enabled to attempt ſomething of conſequence; and this the boaſts of the provincials, that they were beſieging thoſe who had been ſent to ſubdue them, ſeemed to render neceſſary. Some ſkirmiſhes in the mean time happened in the iſlands lying off Boſton harbour, in which the Americans had the advantage, and burnt an armed ſchooner, which her people

179 A great army aſſemble before Boſton.

America. people had been obliged to abandon after ſhe was left aground by the tide. Nothing deciſive, however, took place till the 17th of June. In the neighbourhood of Charleſtown, a place on the northern ſhore of the peninſula on which Boſton ſtands, is a high ground called *Bunker's Hill*, which overlooks and commands the whole town of Boſton. In the night of the 16th the provincials took poſſeſſion of this place: and worked with ſuch indefatigable diligence, that, to the aſtoniſhment of their enemies, they had before daylight almoſt completed a redoubt, with a ſtrong intrenchment reaching half a mile eaſtward, as far as the river Myſtic. After this they were obliged to ſuſtain a heavy and inceſſant fire from the ſhips and floating batteries with which Charleſtown Neck was ſurrounded, as well as the cannon that could reach the place from Boſton; in ſpite of which, however, they continued their work and finiſhed it before mid-day. A conſiderable body of foot was then landed at the foot of Bunker's Hill, under the command of Generals Howe and Pigot; the former being appointed to attack the lines, and the latter the redoubt. The Americans, however, having the advantage of the ground, as well as of their intrenchments, poured down ſuch inceſſant volleys as threatened the whole body with deſtruction; and General Howe was for a little time left almoſt alone, all his officers being killed or wounded. The provincials in the mean time had taken poſſeſſion of Charleſtown, ſo that General Pigot was obliged to contend with them in that place as well as in the redoubt. The conſequence was, that he was overmatched; his troops were thrown into diſorder; and he would in all probability have been defeated, had not General Clinton advanced to his relief: upon which the attack was renewed with ſuch fury, that the provincials were driven beyond the neck that leads to Charleſtown. In the heat of the engagement the Britiſh troops were obliged to ſet fire to the town of Charleſtown, which quickly obliged the provincials to yield after they were deprived of that ſhelter. The loſs on the Britiſh ſide amounted to about 1000, among whom were 19 officers killed and 70 wounded; that of the Americans did not exceed 500.

185 Battle at Bunker's Hill.

The Britiſh troops claimed the victory in this engagement with juſtice, though it muſt be allowed that it was dearly bought; and the Americans boaſted that the real advantages were on their ſide, as they had ſo much weakened the enemy, that they durſt not afterwards venture out of their intrenchments. From the many advantages, however, which the Americans poſſeſſed, it is evident that the greateſt diſplay of valour was on the ſide of their enemies. The former were ſtrongly intrenched, and moſt of their fortifications cannon proof; their ſoldiers were all choſen, and excellent markſmen, to whom muſkets ready loaded were handed as faſt as they were diſcharged; and when one party was wearied, another came to their aſſiſtance, as was perceived by the ſpectators on the tops of the houſes at Boſton. Conſidering, however, that this was the firſt time the provincials had been in actual ſervice, it muſt be owned that they behaved with great ſpirit, and by no means merited the appellation of *cowards*, with which they were ſo often branded in Britain.

In other places the ſame determined ſpirit of reſiſtance appeared on the part of the Americans. Lord North's conciliatory ſcheme was already rejected by the aſſemblies of Pennſylvania and New Jerſey, and afterwards in every other colony. The commencement of hoſtilities at Lexington determined the colony of New York, which had hitherto continued to waver, to unite with the reſt; and as the ſituation of New York renders it unable to reſiſt an attack from the ſea, it was reſolved, before the arrival of a Britiſh fleet, to ſecure the military ſtores, ſend off the women and children, and to ſet fire to the city if it was ſtill found incapable of defence. The exportation of proviſions was everywhere prohibited, particularly to the Britiſh fiſhery on the banks of Newfoundland, or to ſuch colonies of America as ſhould adhere to the Britiſh intereſt. Congreſs reſolved on the eſtabliſhment of an army, and of a large paper currency in order to ſupport it. In the inland northern colonies, Colonels Eaſton and Ethan Allen, without receiving any orders from congreſs, or communicating their deſign to anybody, with a party of only 250 men, ſurpriſed the forts of Crown Point, Ticonderago, and the reſt that form a communication betwixt the colonies and Canada. On this occaſion 200 pieces of cannon fell into their hands, beſides mortars and a large quantity of military ſtores, together with two armed veſſels, and materials for the conſtruction of others.

182 Crown Point and Ticonderago taken by the Americans.

After the battle of Bunker's Hill, the provincials erected fortifications on the heights which commanded Charleſtown, and ſtrengthened the reſt in ſuch a manner that there was no hope of driving them from thence; at the ſame time that their activity and boldneſs aſtoniſhed the Britiſh officers, who had been accuſtomed to entertain too mean an opinion of their courage.

183 Troop in Boſton diſtreſſed.

The troops, thus ſhut up in Boſton, were ſoon reduced to diſtreſs. Their neceſſities obliged them to attempt the carrying off the American cattle on the iſlands before Boſton, which produced frequent ſkirmiſhes; but the provincials, better acquainted with the navigation of theſe ſhores landed on the iſlands, deſtroyed or carried off whatever was of any uſe, burned the lighthouſe at the entrance of the harbour, and took priſoners the workmen ſent to repair it, as well as a party of marines who guarded them. Thus the garriſon were reduced to the neceſſity of ſending out armed veſſels to make prizes indiſcriminately of all that came in their way, and of landing in different places to plunder for ſubſiſtence as well as they could.

184 Articles of confederation between the colonies.

The congreſs in the mean time continued to act with all the vigour which its conſtituents had expected. Articles of confederation and perpetual union were drawn up and ſolemnly agreed upon; by which they bound themſelves and their poſterity for ever. Theſe were in ſubſtance as follow:

1. Each colony was to be independent within itſelf, and to retain an abſolute ſovereignty in all domeſtic affairs.

2. Delegates to be annually elected to meet in congreſs, at ſuch time and place as ſhould be enacted in the preceding congreſs.

3. This aſſembly ſhould have the power of determining war or peace, making alliances; and in ſhort all that power which ſovereigns of ſtates uſually claim as their own.

4. The

America. 4. The expences of war to be paid out of the common treaſury, and raiſed by a poll tax on males between 16 and 60: the proportions to be determined by the laws of the colony.

5. An executive council to be appointed to act in place of the congreſs during its receſs.

6. No colony to make war with the Indians without conſent of congreſs.

7. The boundaries of all the Indian lands to be ſecured and aſcertained to them; and no purchaſes of lands were to be made by individuals, or even by a colony, without conſent of congreſs.

8. Agents appointed by congreſs ſhould reſide among the Indians, to prevent frauds in trading with them, and to relieve at the public expence, their wants and diſtreſſes.

9. This confederation to laſt until there ſhould be a reconciliation with Britain; or, if that event ſhould not take place, it was to be perpetual.

After the action of Bunker's Hill, however, when the power of Great Britain appeared leſs formidable in the eyes of America than before, congreſs proceeded formally to juſtify their proceedings in a declaration drawn up in terms more expreſſive, and well calculated to excite attention.

"Were it poſſible (ſaid they) for men who exerciſe their reaſon, to believe that the divine Author of our exiſtence intended a part of the human race to hold an abſolute property in and unbounded power over others, marked out by His infinite goodneſs and wiſdom as the objects of a regal domination, never rightfully reſiſtible, however ſevere and oppreſſive; the inhabitants of theſe colonies might at leaſt require from the parliament of Great Britain ſome evidence that this dreadful authority over them had been granted to that body: but a reverence for our Great Creator, principles of humanity, and the dictates of common ſenſe, muſt convince all thoſe who reflect upon the ſubject, that government was inſtituted to promote the welfare of mankind, and ought to be adminiſtered for the attainment of that end.

"The legiſlature of Great Britain, however, ſtimulated by an inordinate paſſion for power, not only unjuſtifiable, but which they know to be peculiarly reprobated by the very conſtitution of that kingdom; and deſpairing of ſucceſs in any mode of conteſt where regard ſhould be had to law, truth, or right; have at length, deſerting theſe, attempted to effect their cruel and impolitic purpoſe, of enſlaving theſe colonies, by violence, and have thereby rendered it neceſſary for us to cloſe with their laſt appeal from reaſon to arms. Yet, however blinded that aſſembly may be, by their intemperate rage for unlimited domination, ſo to ſlight juſtice in the opinion of mankind, we eſteem ourſelves bound by obligations to the reſt of the world to make known the juſtice of our cauſe."

After taking notice of the manner in which their anceſtors left Britain, the happineſs attending the mutual friendly commerce betwixt that country and her colonies, and the remarkable ſucceſs of the late war, they proceed as follows: "The new miniſtry finding the brave foes of Britain, though frequently defeated, yet ſtill contending, took up the unfortunate idea of granting them a haſty peace, and of then ſubduing her faithful friends.

185 Declaration on taking up arms.

"These devoted colonies were judged to be in ſuch a ſtate as to preſent victories without bloodſhed, and all the eaſy emoluments of ſtatutable plunder. The uninterrupted tenour of their peaceable and reſpectful behaviour from the beginning of their colonization; their dutiful, zealous, and uſeful ſervices during the war, though ſo recently and amply acknowledged in the moſt honourable manner by his majeſty, by the late king, and by parliament, could not ſave them from the intended innovations. Parliament was influenced to adopt the pernicious project; and aſſuming a new power over them, has in the courſe of eleven years given ſuch deciſive ſpecimens of the ſpirit and conſequences attending this power, as to leave no doubt of the effects of acquieſcence under it.

"They have undertaken to give and grant our money without our conſent, though we have ever exerciſed an excluſive right to diſpoſe of our own property. Statutes have been paſſed for extending the juriſdiction of the courts of admiralty, and vice-admiralty, beyond their ancient limits; for depriving us of the accuſtomed and ineſtimable right of trial by jury, in caſes affecting both life and property; for ſuſpending the legiſlature of one of our colonies; for interdicting all commerce to the capital of another; and for altering fundamentally the form of government eſtabliſhed by charter, and ſecured by acts of its own legiſlature; and ſolemnly confirmed by the crown; for exempting the murderers of coloniſts from legal trial, and in effect from puniſhment; for erecting in a neighbouring province, acquired by the joint arms of Great Britain and America, a deſpotiſm dangerous to our very exiſtence; and for quartering ſoldiers upon the coloniſts in time of a profound peace. It has alſo been reſolved in parliament, that coloniſts charged with committing certain offences, ſhall be tranſported to England to be tried.

"But why ſhould we enumerate our injuries in detail? By one ſtatute it was declared, that parliament can of right make laws to bind us in all caſes whatever. What is to defend us againſt ſo enormous, ſo unlimited a power? Not a ſingle perſon who aſſumes it is choſen by us, or is ſubject to our controul or influence; but on the contrary, they are all of them exempt from the operation of ſuch laws; and an American revenue, if not diverted from the oſtenſible purpoſes from which it is raiſed, would actually lighten their own burdens in proportion as it increaſes ours.

"We ſaw the miſery to which ſuch deſpotiſm would reduce us. We for ten years inceſſantly and ineffectually beſieged the throne as ſupplicants; we reaſoned, we remonſtrated with parliament in the moſt mild and decent language: but adminiſtration, ſenſible that we ſhould regard theſe meaſures as freemen ought to do, ſent over fleets and armies to enforce them.

"We have purſued every temperate, every reſpectful meaſure; we have even proceeded to break off all commercial intercourſe with our fellow-ſubjects as our laſt peaceable admonition, that our attachment to no nation on earth would ſupplant our attachment to liberty: this we flattered ourſelves was the ultimate ſtep of the controverſy; but ſubſequent events have ſhown how vain was this hope of finding moderation in our enemies!

"The Lords and Commons, in their addreſs in the

month

America. month of February, said, that a rebellion at that time actually exiſted in the province of Maſſachuſets Bay, and that thoſe concerned in it had been countenanced and encouraged by unlawful combinations and engagements entered into by his majeſty's ſubjects in ſeveral of the colonies; and therefore they beſought his majeſty that he would take the moſt effectual meaſures to enforce due obedience to the laws and authority of the ſupreme legiſlature. Soon after the commercial intercourſe of whole colonies with foreign countries was cut off by an act of parliament; by another, ſeveral of them were entirely prohibited from the fiſheries in the ſeas near their coaſts, on which they always depended for their ſubſiſtence; and large reinforcements of ſhips and troops were immediately ſent over to General Gage.

"Fruitleſs were all the entreaties, arguments, and eloquence of an illuſtrious band of the moſt diſtinguiſhed peers and commoners, who nobly and ſtrenuouſly aſſerted the juſtice of our cauſe, to ſtay, or even to mitigate, the heedleſs fury with which theſe accumulated outrages were hurried on. Equally fruitleſs was the interference of the city of London, of Briſtol, and many other reſpectable towns in our favour."

After having reproached parliament, General Gage, and the Britiſh government in general, they proceed thus: "We are reduced to the alternative of chooſing an unconditional ſubmiſſion to tyranny, or reſiſtance by force. The latter is our choice. We have counted the coſt of this conteſt, and find nothing ſo dreadful as voluntary ſlavery. Honour, juſtice, and humanity, forbid us tamely to ſurrender that freedom which we received from our gallant anceſtors, and which our innocent poſterity have a right to receive from us. Our cauſe is juſt; our union is perfect; our internal reſources are great; and, if neceſſary, foreign aſſiſtance is undoubtedly attainable. We fight not for glory or conqueſt; we exhibit to mankind the remarkable ſpectacle of a people attacked by unprovoked enemies. They boaſt of their privileges and civilization, and yet proffer no milder conditions than ſervitude or death. In our own native land, in defence of the freedom that is our birthright, for the protection of our property acquired by the honeſt induſtry of our forefathers and our own, againſt violence actually offered, we have taken up arms; we ſhall lay them down when hoſtilities ſhall ceaſe on the part of our aggreſſors, and all danger of their being renewed ſhall be removed,—and not before."

Theſe are ſome of the moſt ſtriking paſſages in the declaration of congreſs on taking up arms againſt Great Britain, and dated July 6th 1775. Without inquiring whether the principles on which it is founded are right or wrong, the determined ſpirit which it ſhows ought to have convinced us, that the conqueſt of America was an event ſcarcely ever to be expected. In every other reſpect an equal ſpirit was ſhown; and the rulers of the Britiſh nation had the mortification to ſee thoſe whom they ſtyled *rebels* and *traitors*, ſucceed in negotiations in which they themſelves were utterly foiled. In the paſſing of the Quebec bill, miniſtry had flattered themſelves that the Canadians would be ſo much attached to them on account of reſtoring the French laws, that they would very readily join in any attempt againſt the coloniſts, who had reprobated that bill in ſuch ſtrong terms; but in this, as in every thing elſe indeed, they found themſelves miſtaken. The Canadians having been ſubject to Britain for a period of 15 years, and being thus rendered ſenſible of the ſuperior advantages of Britiſh government, received the bill itſelf with evident marks of diſapprobation; nay, reprobated it as tyrannical and oppreſſive. A ſcheme had been formed for General Carleton, governor of the province, to raiſe an army of Canadians wherewith to act againſt the Americans; and ſo ſanguine were the hopes of adminiſtration in this reſpect, that they had ſent 20,000 ſtand of arms, and a great quantity of military ſtores, to Quebec for the purpoſe. But the people, though they did not join the Americans, yet were found immoveable in their purpoſe to ſtand neuter. Application was made to the biſhop; but he declined to interpoſe his influence, as contrary to the rules of the Popiſh clergy: ſo that the utmoſt efforts of government in this province were found to anſwer little or no purpoſe.

186 Quebec bill diſagreeable to thoſe whom it was intended to please.

187 Miniſtry attempt in vain to arm the Indians.

The Britiſh adminiſtration next tried to engage the Indians in their cauſe. But though agents were diſperſed among them with large preſents to the chiefs, they univerſally replied, that they did not underſtand the nature of the quarrel, nor could they diſtinguiſh whether thoſe who dwelt in America or on the other ſide of the ocean were in fault: but they were ſurpriſed to ſee Engliſhmen aſk their aſſiſtance againſt one another; and adviſed them to be reconciled, and not think of ſhedding the blood of their brethren.—To the repreſentations of congreſs they paid more reſpect. Theſe ſet forth, that the Engliſh on the other ſide of the ocean had taken up arms to enſlave not only their countrymen in America, but the Indians alſo; and if the latter ſhould enable them to overcome the coloniſts, they themſelves would ſoon be reduced to a ſtate of ſlavery alſo. By arguments of this kind theſe ſavages were engaged to remain neuter; and thus the coloniſts were freed from a moſt dangerous enemy. On this occaſion the congreſs thought proper to hold a ſolemn conference with the different tribes of Indians. The ſpeech made by them on the occaſion is curious, but too long to be fully inſerted. The following is a ſpecimen of the European mode of addreſſing theſe people.

188 Speech of the commiſſioners from congreſs to the Indians.

"Brothers, Sachems, and Warriors!

We, the delegates from the Twelve United Provinces, now ſitting in general congreſs at Philadelphia, ſend their talk to you our brothers.

"Brothers, and Friends now attend!

"When our fathers croſſed the great water, and came over to this land, the king of England gave them a talk, aſſuring them that they and their children ſhould be his children; and that if they would leave their native country, and make ſettlements, and live here, and buy and ſell, and trade with their brethren beyond the water, they ſhould ſtill keep hold of the ſame covenant-chain, and enjoy peace; and it was covenanted, that the fields, houſes, goods, and poſſeſſions which our fathers ſhould acquire, ſhould remain to them as their own, and be their children's for ever, and at their ſole diſpoſal.

"Brothers and Friends, open a kind ear!

"We will now tell you of the quarrel betwixt the

America. counſellors of King George and the inhabitants and colonies of America.

"Many of his counſellors have perſuaded him to break the covenant-chain, and not to ſend us any more good talks. They have prevailed upon him to enter into a covenant againſt us; and have torn aſunder, and caſt behind their backs, the good old covenant which their anceſtors and ours entered into, and took ſtrong hold of. They now tell us, they will put their hands into our pocket without aſking, as though it were their own: and at their pleaſure they will take from us our charters or written civil conſtitution, which we love as our lives; alſo our plantations, our houſes and goods, whenever they pleaſe, without aſking our leave. They tell us, that our veſſels may go to that or this iſland in the ſea, but to this or that particular land we ſhall not trade any more; and, in caſe of our non-compliance with theſe new orders, they ſhut up our harbours.

"Brothers, we live on the ſame ground with you; the ſame iſland is our common birthplace. We deſire to ſit down under the ſame tree of peace with you; let us water its roots, and cheriſh the growth, till the large leaves and flouriſhing branches ſhall extend to the ſetting ſun, and reach the ſkies. If any thing diſagreeable ſhould ever fall out between us, the Twelve United Colonies, and you, the Six Nations, to wound our peace, let us immediately ſeek meaſures for healing the breach. From the preſent ſituation of our affairs, we judge it expedient to kindle up a ſmall fire at Albany, where we may hear each other's voice, and diſcloſe our minds fully to one another."

The other remarkable tranſactions of this congreſs were the ultimate refuſal of the conciliatory propoſal made by Lord North, of which ſuch ſanguine expectations had been formed by the Engliſh miniſtry; and appointing a generaliſſimo to command their armies, which were now very numerous. The perſon choſen for this purpoſe was George Waſhington: a man ſo univerſally beloved, that he was raiſed to ſuch a high ſtation by the unanimous voice of congreſs; and his ſubſequent conduct ſhowed him every way worthy of it. Horace Gates and Charles Lee, two Engliſh officers of conſiderable reputation, were alſo choſen; the former an adjutant-general, the ſecond a major-general. Artemus Ward, Philip Schuyler, and Iſrael Putnam, were likewiſe nominated major-generals. Seth Pomeroy, Richard Montgomery, David Wooſter, William Heath, Joſeph Spencer, John Thomas, John Sullivan, and Nathaniel Green were choſen brigadier-generals at the ſame time.

189 Gen. Waſhington appointed commander in chief.

Congreſs had now alſo the ſatisfaction to receive deputies from the colony of Georgia, expreſſing a deſire to join the confederacy. The reaſons they gave for renouncing their allegiance to Britain were, that the conduct of parliament towards the other colonies had been oppreſſive; that though the obnoxious acts had not been extended to them, they could view this only as an omiſſion, becauſe of the ſeeming little conſequence of their colony, and therefore looked upon it rather to be a ſlight than a favour. At the ſame time they framed a petition to the king, ſimilar to that ſent by the other colonies, and which met with a ſimilar reception.

190 Georgia acceſſion to the confederacy.

The ſucceſs which had hitherto attended the Americans in all their meaſures, now emboldened them to think not only of defending themſelves, but likewiſe of acting offenſively againſt Great Britain. The conqueſt of Canada appeared an object within their reach, and one that would be attended with many advantages; and as an invaſion of that province was already facilitated by the taking of Crown Point and Ticonderago, it was reſolved if poſſible to penetrate that way into Canada, and reduce Quebec during the winter, before the fleets and armies, which they were well aſſured would ſail thither from Britain, ſhould arrive. By order of congreſs, therefore, 3000 men were put under the command of Generals Montgomery and Schuyler, with orders to proceed to Lake Champlain, from whence they were to be conveyed in flat-bottomed boats to the mouth of the river Sorel, a branch of the great river St Lawrence, and on which is ſituated a fort of the ſame name with the river. On the other hand, they were oppoſed by General Carleton governor of Canada, a man of great activity and experience in war; who, with a very few troops, had hitherto been able to keep in awe the diſaffected people of Canada, notwithſtanding all the repreſentations of the coloniſts. He had now augmented his army by a conſiderable number of Indians, and promiſed even in his preſent ſituation to make a very formidable reſiſtance. America. 191 The Americans attempt the conqueſt of Canada.

As ſoon as General Montgomery arrived at Crown Point, he received information that ſeveral armed veſſels were ſtationed at St John's, a ſtrong fort on the Sorel, with a view to prevent his croſſing the lake; on which he took poſſeſſion of an iſland which commands the mouth of the Sorel, and by which he could prevent them from entering the lake. In conjunction with General Schuyler, he next proceeded to St John's: but finding that place too ſtrong, he landed on a part of the country conſiderably diſtant, and full of woods and ſwamps. From thence, however, they were driven by a party of Indians whom General Carleton had employed.

The provincial army was now obliged to retreat to the iſland of which they had at firſt taken poſſeſſion; where General Schuyler being taken ill, Montgomery was left to command alone. His firſt ſtep was to gain over the Indians whom General Carleton had employed, and this he in a great meaſure accompliſhed; after which, on receiving the full number of troops appointed for his expedition, he determined to lay ſiege to St John's. In this he was facilitated by the reduction of Chamblee, a ſmall fort in the neighbourhood, where he found a large ſupply of powder. An attempt was made by General Carleton to relieve the place; for which purpoſe he with great pains collected about 1000 Canadians, while Colonel Maclean propoſed to raiſe a regiment of the Highlanders who had emigrated from their own country to America. 192 Chamblee taken.

But while General Carleton was on his march with theſe new levies, he was attacked by a ſuperior force of provincials, and utterly defeated; which being made known to another body of Canadians who had joined Colonel Maclean, they abandoned him without ſtriking a blow, and he was obliged to retreat to Quebec. 193 General Carleton defeated.

The defeat of General Carleton was a ſufficient recompenſe to the Americans for that of Colonel Ethan Allen, which had happened ſome time before. The

ſucceſs

America. succeſs which had attended this gentleman againſt Crown Point and Ticonderago had emboldened him to make a ſimilar attempt on Montreal; but being attacked by the militia of the place, ſupported by a detachment of regulars, he was entirely defeated and taken priſoner.

As the defeat of General Carleton and the deſertion of Maclean's forces left no room for the garriſon of St John's to hope for any relief, they now conſented to ſurrender themſelves priſoners of war; but were in other reſpects treated with great humanity. They were in number 500 regulars and 200 Canadians, among whom were many of the French nobility; who had been very active in promoting the cauſe of Britain among their countrymen.

194 St John's fort taken,

General Montgomery next took meaſures to prevent the Britiſh ſhipping from paſſing down the river from Montreal to Quebec. This he accompliſhed ſo effectually, that the whole were taken. The town itſelf was obliged to ſurrender at diſcretion; and it was with the utmoſt difficulty that General Carleton eſcaped in an open boat by the favour of a dark night.

195 and likewiſe Montreal.

No further obſtacle now remained in the way of the Americans to the capital, except what aroſe from the nature of the country; and theſe indeed were very conſiderable. Nothing, however, could damp the ardour of the provincials. Notwithſtanding it was now the middle of November, and the depth of winter was at hand, Colonel Arnold formed a deſign of penetrating through woods, moraſſes, and the moſt frightful ſolitudes from New England to Canada by a nearer way than that which Montgomery had choſen; and this he accompliſhed in ſpite of every difficulty, to the aſtoniſhment of all who ſaw or heard of the attempt. This deſperate march, however, cannot be looked upon as conducive to any good purpoſe. A third part of his men under another colonel had abandoned him by the way, under pretence of want of proviſions; the total want of artillery rendered his preſence inſignificant before a place ſtrongly fortified; and the ſmallneſs of his army rendered it even doubtful whether he could have taken the town by ſurpriſe. The Canadians indeed were amazed at the exploit, and their inclination to revolt from Britain was ſomewhat augmented; but none of them as yet took up arms in behalf of America. The conſternation into which the town of Quebec was thrown proved detrimental rather than otherwiſe to the expedition; as it doubled the vigilance and activity of the inhabitants to prevent any ſurpriſe; and the appearance of common danger united all parties, who, before the arrival of Arnold, were contending moſt violently with one another. He was therefore obliged to content himſelf with blocking up the avenues to the town, in order to diſtreſs the garriſon for want of proviſions; and even this he was unable to do effectually, by reaſon of the ſmall number of his men.

196 Col. Arnold penetrates into Canada.

The matter was not much mended by the arrival of General Montgomery. The force he had with him, even when united to that of Arnold, was too inſignificant to attempt the reduction of a place ſo ſtrongly fortified, eſpecially with the aſſiſtance only of a few mortars and field-pieces. After the ſiege had continued through the month of December, General Montgomery, conſcious that he could accompliſh his end no other way than by ſurpriſe, reſolved to make an attempt on the laſt day of the year 1775. The method he took at this time was perhaps the beſt that human wiſdom could deviſe. He advanced by break of day, in the midſt of a heavy fall of ſnow, which covered the approaching men from the ſight of the enemy. Two real attacks were made by himſelf and Colonel Arnold, at the ſame time that two feigned attacks were made on two other places, thus to diſtract the garriſon, and make them divide their forces. One of the real attacks was made by the people of New York, and the other by thoſe of New England under Arnold. Their hopes of ſurpriſing the place, however, were defeated by the firſt for the attack being through ſome miſtake given too ſoon. General Montgomery himſelf had the moſt dangerous place, being obliged to paſs between the river and ſome high rocks on which the Upper Town ſtands; ſo that he was forced to make what haſte he could to cloſe with the enemy. His fate, however, was now decided. Having forced the firſt barrier, a violent diſcharge of muſketry and grape ſhot from the ſecond killed him, his principal officers, and the moſt of the party he commanded; on which thoſe who remained immediately retreated. Colonel Arnold in the mean time made a deſperate attack on the Lower Town, and carried one of the barriers after an obſtinate reſiſtance for an hour; but in the action he himſelf received a wound, which obliged him to withdraw. The attack, however, was continued by the officers whom he had left, and another barrier forced: but the garriſon, now perceiving that nothing was to be feared except from that quarter, collected their whole force againſt it; and, after a deſperate engagement of three hours, overpowered the provincials, and obliged them to ſurrender.

198 General Montgomery killed, and the Americans defeated.

In this action, it muſt be confeſſed that the valour of the provincial troops could not be exceeded. They had fought under as great diſadvantages as thoſe which attended the Britiſh at Bunker's Hill, and had behaved equally well. Such a terrible diſaſter left no hope remaining of the accompliſhment of their purpoſe, as General Arnold could now ſcarce number 800 effective men under his command. He did not, however, abandon the province, or even remove to a greater diſtance than three miles from Quebec; and here he ſtill found means to annoy the garriſon very conſiderably by intercepting their proviſions. The Canadians, notwithſtanding the bad ſucceſs of the American arms, ſtill continued friendly; and thus he was enabled to ſuſtain the hardſhips of a winter encampment in that moſt ſevere climate. The congreſs, far from paſſing any cenſure on him for his misfortune, created him a brigadier-general.

199 Arnold created a brigadier-general.

While hoſtilities were thus carried on with vigour in the north, the flame of contention was gradually extending itſelf in the ſouth. Lord Dunmore, the governor of Virginia, was involved in diſputes ſimilar to thoſe which had taken place in other colonies. Theſe had proceeded ſo far that the aſſembly was diſſolved; which in this province was attended with a conſequence unknown to the reſt. As Virginia contained a great number of ſlaves, it was neceſſary that a militia ſhould be kept conſtantly on foot to keep them in awe. During the diſſolution of the aſſembly the militia laws expired; and the people, after complaining of the danger they were in from the negroes, formed a convention,

200 Diſputes of Lord Dunmore with his province of Virginia.

America. which enacted that each county ſhould raiſe a quota for the defence of the province. Dunmore, on this, removed the powder from Williamſburg; which created ſuch diſcontents, that an immediate quarrel would probably have enſued, had not the merchants of the town undertaken to obtain ſatisfaction for the injury ſuppoſed to be done to the community. This tranquillity, however, was ſoon interrupted; the people, alarmed by a report that an armed party were on their way from the man of war where the powder had been depoſited, aſſembled in arms, and determined to oppoſe by force any farther removals. In ſome of the conferences which paſſed at this time, the governor let fall ſome unguarded expreſſions, ſuch as threatening them with ſetting up the royal ſtandard, proclaiming liberty to the negroes, deſtroying the town of Williamſburg, &c. which were afterwards made public, and exaggerated in ſuch a manner as greatly to increaſe the public ferment.

The people now held frequent aſſemblies. Some of them took up arms with a deſign to force the governor to reſtore the powder, and to take the public money into their own poſſeſſion; but on their way to Williamſburg for this purpoſe, they were met by the receiver-general, who became ſecurity for the payment of the gunpowder, and the inhabitants promiſed to take care of the magazine and public revenue.

201 He ſends his family aboard a man of war.

By this inſurrection the governor was ſo much intimidated, that he ſent his family on board a man of war. He himſelf, however, iſſued a proclamation, in which he declared the behaviour of the perſons who promoted the tumult treaſonable, accuſed the people of diſaffection, &c. On their part they were by no means deficient in recriminating; and ſome letters of his to Britain being about the ſame time diſcovered, conſequences enſued extremely ſimilar to thoſe which had been occaſioned by thoſe of Mr Hutchinſon at Boſton.

202 Fortifies his palace.

In this ſtate of confuſion the governor thought it neceſſary to fortify his palace with artillery, and procure a party of marines to guard it. Lord North's conciliatory propoſal arriving alſo about the ſame time, he uſed his utmoſt endeavours to cauſe the people comply with it. The arguments he uſed were ſuch as muſt do him honour; and had not matters already gone to ſuch a pitch of diſtraction, it is highly probable that ſome attention would have been paid to them. "The view (he ſaid) in which the colonies ought to behold this conciliatory propoſal, was no more than an earneſt admonition from Great Britain to relieve her wants: that the utmoſt condeſcendence had been uſed in the mode of application; no determinate ſum having been fixed, as it was thought moſt worthy of Britiſh generoſity to take what they thought could be conveniently ſpared and likewiſe to leave the mode of raiſing it to themſelves," &c. But the clamour and diſſatisfaction were now ſo univerſal, that nothing elſe could be attended to. The governor had called an aſſembly for the purpoſe of laying this conciliatory propoſal before them; but it had been little attended to. The aſſembly began their ſeſſion by inquiries into the ſtate of the magazine. It had been broken into by ſome of the townſmen; for which reaſon ſpring-guns had been placed there by the governor, which diſcharged themſelves upon the offenders at their entrance: theſe circumſtances, with others of a ſimilar kind, raiſed ſuch a violent uproar, that as ſoon as the preliminary buſineſs of the ſeſſion was over, the governor retired on board a man of war, informing the aſſembly that he durſt no longer truſt himſelf on ſhore. This produced a long courſe of diſputation, which ended in a poſitive refuſal of the governor to truſt himſelf again in Williamſburg, even to give his aſſent to the bills which could not be paſſed without it, and though the aſſembly offered to bind themſelves for his perſonal ſafety. In his turn he requeſted them to meet him on board the man of war, where he then was; but this propoſal was rejected, and all further correſpondence containing the leaſt appearance of friendſhip was diſcontinued.

203 His arguments for L. North's conciliatory plan.

America. 204 The governor retires on board a man of war.

Lord Dunmore, thus deprived of his government, attempted to reduce by force thoſe whom he could no longer govern. Some of the moſt ſtrenuous adherents to the Britiſh cauſe, whom their zeal had rendered obnoxious at home, now repaired to him. He was alſo joined by numbers of black ſlaves. With theſe, and the aſſiſtance of the Britiſh ſhipping, he was for ſome time enabled to carry on a kind of predatory war, ſufficient to hurt and exaſperate, but not to ſubdue. After ſome inconſiderable attempts on land, proclaiming liberty to the ſlaves, and ſetting up the royal ſtandard, he took up his reſidence at Norfolk, a maritime town of ſome conſequence, where the people were better affected to Britain than in moſt other places. A conſiderable force, however, was collected againſt him; and the natural impetuoſity of his temper prompting him to act againſt them with more courage than caution, he was entirely defeated, and obliged to retire to his ſhipping, which was now crowded by the number of thoſe who had incurred the reſentment of the provincials.

205 Attempts to reduce the colony by force,

206 but is entirely defeated.

In the mean time a ſcheme of the utmoſt magnitude and importance was formed by one Mr Conolly, a Pennſylvanian of an intrepid and aſpiring diſpoſition, and attached to the cauſe of Britain. The firſt ſtep of this plan was to enter into a league with the Ohio Indians. This he communicated to Lord Dunmore, and it received his approbation: Upon which Conolly ſet out, and actually ſucceeded in his deſign. On his return he was deſpatched to General Gage, from whom he received a colonel's commiſſion, and ſet out in order to accompliſh the remainder of his ſcheme. The plan in general was, that he ſhould return to the Ohio, where, by the aſſiſtance of the Britiſh and Indians in theſe parts, he was to penetrate through the back ſettlements into Virginia, and join Lord Dunmore at Alexandria. But by an accident very naturally to be expected, he was diſcovered, taken priſoner, and thrown into a dungeon.

207 Mr Conolly's plan for reducing Virginia.

209 He is diſcovered and taken priſoner.

After the retreat of Lord Dunmore from Norfolk, that place was taken poſſeſſion of by the provincials, who treated the loyaliſts that had remained there with great cruelty; at the ſame time that they greatly diſtreſſed thoſe on board Lord Dunmore's fleet, by refuſing to ſupply them with any neceſſaries. Nor was this all; the vicinity of the ſhipping was ſo great as to afford the riflemen an opportunity of aiming at the people on board, and exerciſing the cruel occupation of killing them, in which they did not fail every day to employ themſelves. Theſe proceedings at laſt drew a remonſtrance from his lordſhip; in which he inſiſted that the fleet ſhould be furniſhed with neceſſaries, and that

209 Cruelty of the Americans.

America.

that the ſoldiers ſhould deſiſt from the cruel diverſion above mentioned; but both theſe requeſts being denied, a reſolution was taken to ſet fire to the town. After giving the inhabitants proper warning, a party landed, under cover of a man of war, and ſet fire to that part which lay neareſt the ſhore; but the flames were obſerved at the ſame time to break forth in every other quarter, and the whole town was reduced to aſhes. This univerſal deſtruction, by which a loſs of more than 300,000l. was incurred, is ſaid to have been occaſioned by order of the congreſs itſelf, that the loyaliſts might find no refuge there for the future.

210 The town of Norfolk deſtroyed.

211 The governors of South and North Carolina expelled.

In the ſouthern colonies of Carolina the governors were expelled and obliged to take refuge on board of men of war, as Lord Dunmore had been; Mr Martin, governor of North Carolina, on a charge of attempting to raiſe the back ſettlers, conſiſting chiefly of Scots Highlanders, againſt the colony. Having ſecured themſelves againſt any attempts from theſe enemies, however, they proceeded to regulate their internal concerns in the ſame manner as the reſt of the colonies; and by the end of the year 1775, Britain beheld the whole of America united againſt her in the moſt determined oppoſition. Her vaſt poſſeſſions of that tract of land (ſince known by the name of the *Thirteen United States*) were now reduced to the ſingle town of Boſton; in which her forces were beſieged by an enemy with whom they were apparently not able to cope, and by whom they muſt of courſe expect in a very ſhort time to be expelled. The ſituation of the inhabitants of Boſton, indeed, was peculiarly unhappy. After having failed in their attempts to leave the town, General Gage had conſented to allow them to retire with their effects; but afterwards, for what reaſon does not well appear, he refuſed to fulfil his promiſe. When he reſigned his place to General Howe in October 1775, the latter, apprehenſive that they might give intelligence of the ſituation of the Britiſh troops, ſtrictly prohibited any perſon from leaving the place under pain of military execution. Thus matters continued till the month of March 1776, when the town was evacuated.

212 Miſerable ſituation of the inhabitants of Boſton.

213 Boſton ſeverely cannonaded by the provincials.

On the 2d of that month, General Waſhington opened a battery on the weſt ſide of the town, from whence it was bombarded with a heavy fire of cannon at the ſame time; and three days after, it was attacked by another battery from the eaſtern ſhore. This terrible attack continued for 14 days without intermiſſion; when General Howe, finding the place no longer tenible, determined if poſſible to drive the enemy from their works. Preparations were therefore made for a moſt vigorous attack on a hill called Dorcheſter Neck, which the Americans had fortified in ſuch a manner as would in all probability have rendered the enterpriſe next to deſperate. No difficulties, however, were ſufficient to daunt the ſpirit of the general; and every thing was in readineſs, when a ſudden ſtorm prevented this intended exertion of Britiſh valour. Next day, upon a more cloſe inſpection of the works they were to attack, it was thought adviſable to deſiſt from the enterpriſe altogether. The fortifications were very ſtrong, and extremely well provided with artillery; and beſides other implements of deſtruction, upwards of 100 hogſheads of ſtones were provided to roll down upon the enemy as they came up; which, as the aſcent was extremely ſteep, muſt have done prodigious execution.

America.

Nothing therefore now remained but [illegible] retreat; and even this was attended with the utmoſt difficulty and danger. The Americans, however, knowing that it was in the power of the Britiſh general to reduce the town to aſhes, which could not have been repaired in many years, did not think proper to give the leaſt moleſtation; and for the ſpace of a fortnight the troops were employed in the evacuation of the place, from whence they carried along with them 200 of the inhabitants, who durſt not ſtay on account of their attachment to the Britiſh cauſe. From Boſton they ſailed to Halifax; but all their vigilance could not prevent a number of valuable ſhips from falling into the hands of the enemy. A conſiderable quantity of cannon and ammunition had alſo been left at Bunker's Hill and Boſton Neck; and in the town an immenſe variety of goods, principally woollen and linen, of which the provincials ſtood very much in need. The eſtates of thoſe who fled to Halifax were confiſcated; as alſo thoſe who were attached to government, and had remained in the town. As an attack was expected as ſoon as the Britiſh forces ſhould arrive, every method was employed to render the fortifications, already very ſtrong, impregnable. For this purpoſe ſome foreign engineers were employed, who had before arrived at Boſton; and ſo eager were people of all ranks to accompliſh this buſineſs, that every able-bodied man in the place, without diſtinction of rank, ſet apart two days in the week, to complete it the ſooner.

215 Its fortifications ſtrengthened.

216 Congreſs declares the States of America independent.

The Americans, exaſperated to the utmoſt by the proceedings of parliament, now formally renounced all connexion with Britain, and declared themſelves independent. This celebrated declaration was publiſhed on the 4th of July 1776. Previous to this a circular letter had been ſent through each colony, ſtating the reaſons for it; and ſuch was the animoſity now everywhere prevailing againſt Great Britain, that it met with univerſal approbation, except in the province of Maryland alone. It was not long, however, before the people of that colony, finding themſelves left in a very dangerous minority, thought proper to accede to the meaſures of the reſt. The manifeſto itſelf was much in the uſual ſtyle, ſtating a long liſt of grievances, for which redreſs had been often applied for in vain; and for theſe reaſons they determined on a final ſeparation; to hold the people of Britain as the reſt of mankind, "enemies in war, in peace friends."

After thus publicly throwing off all allegiance and hope of reconciliation, the coloniſts ſoon found that an exertion of all their ſtrength was required in order to ſupport their pretenſions. Their arms, indeed, had not, during this ſeaſon, been attended with ſucceſs, in Canada. Reinforcements had been promiſed to Colonel Arnold, who ſtill continued the blockade of Quebec; but they did not arrive in time to ſecond his operations. Being ſenſible, however, that he muſt either deſiſt from the enterpriſe, or finiſh it ſucceſsfully, he [illegible] recommenced in form; attempting to burn the ſhipping, and even to ſtorm the town itſelf. They were unſucceſsful, however, by reaſon of the ſmallneſs of their number, though they ſucceeded ſo far as to burn a number of houſes in the ſuburbs; and the garriſon

217 The [illegible] of Quebec raiſed.

were

America.

were obliged to pull down the remainder, in order to prevent the fire from ſpreading.

As the provincials, though unable to reduce the town, kept the garriſon in continual alarms, and in a very diſagreeable ſituation, ſome of the nobility collected themſelves into a body under the command of one Mr Beaujeu, in order to relieve their capital; but they were met on their march by the provincials, and ſo entirely defeated, that they were never afterwards able to attempt any thing. The Americans, however, had but little reaſon to plume themſelves on this ſucceſs. Their want of artillery at laſt convinced them, that it was impracticable in their ſituation to reduce a place ſo ſtrongly fortified: the ſmallpox at the ſame time made its appearance in their camp, and carried off great numbers; intimidating the reſt to ſuch a degree, that they deſerted in crowds. To add to their misfortune, the Britiſh reinforcements unexpectedly appeared, and the ſhips made their way through the ice with ſuch celerity, that the one part of their army was ſeparated from the other; and General Carleton ſallying out as ſoon as the reinforcement was landed, obliged them to fly with the utmoſt precipitation, leaving behind them all their cannon and military ſtores; at the ſame time that their ſhipping was entirely captured by veſſels ſent up the river for that purpoſe. On this occaſion the provincials fled with ſuch precipitation that they could not be overtaken; ſo than none fell into the hands of the Britiſh excepting the ſick and wounded. General Carleton now gave a ſignal inſtance of his humanity: Being well appriſed that many of the provincials had not been able to accompany the reſt in their retreat, and that they were concealed in woods, &c. in a very deplorable ſituation, he generouſly iſſued a proclamation, ordering proper perſons to ſeek them out, and give them relief at the public expence; at the ſame time, leſt, through fear of being made priſoners, they ſhould refuſe theſe offers of humanity, he promiſed, that, as ſoon as their ſituation enabled them, they ſhould be at liberty to depart to their reſpective homes.

218 Canadians defeated by the provincials;

219 who are in their turn defeated by General Carleton.

220 Humanity of the Britiſh general.

221 He purſues the provincials.

The Britiſh general, now freed from any danger of an attack, was ſoon enabled to act offenſively againſt the provincials, by the arrival of the forces deſtined for that purpoſe from Britain. By theſe he was put at the head of 12,000 regular troops, among whom were thoſe of Brunſwick. With this force he inſtantly ſet out to the Three Rivers, where he expected that Arnold would have made a ſtand; but he had fled to Sorel, a place 150 miles diſtant from Quebec, where he was at laſt met by the reinforcements ordered by congreſs. Here, though the preceding events were by no means calculated to inſpire much military ardour, a very daring enterpriſe was undertaken; and this was to ſurpriſe the Britiſh troops poſted here under Generals Fraſer and Nesbit; of whom the former commanded thoſe on land, the latter ſuch as were on board of tranſports and were but a little way diſtant. The enterpriſe was undoubtedly very hazardous, both on account of the ſtrength of the parties againſt whom they were to act, and as the main body of the Britiſh forces was advanced within 50 miles of the place; ſo that a number of armed veſſels and tranſports with troops lay between them and the Three Rivers. Two thouſand choſen men, however, under General Thomſon, engaged in this enterpriſe. Their ſucceſs was by no means anſwerable to their ſpirit and valour. Though they paſſed the ſhipping without being obſerved, General Fraſer had notice of their landing; and thus being prepared to receive them, they were ſoon thrown into diſorder, at the ſame time that General Neſbit, having landed his forces, prepared to attack them in the rear. On this occaſion ſome field pieces did prodigious execution, and a retreat was found to be unavoidable. General Neſbit, however, had got between them and their boats; ſo that they were obliged to take a circuit through a deep ſwamp, while they were hotly purſued by both parties at the ſame time, who marched for ſome miles on each ſide of the ſwamp, till at laſt the miſerable provincials were ſheltered from further danger by a wood at the end of the ſwamp. Their general, however, was taken, with 200 of his men.

America.

222 General Thomſon defeated and taken priſoner by General Fraſer.

By this diſaſter the provincials loſt all hopes of accompliſhing any thing in Canada. They demoliſhed their works, and carried off their artillery with the utmoſt expedition. They were purſued, however, by General Burgoyne; againſt whom it was expected that they would have collected all their force, and made a reſolute ſtand. But they were now too much diſpirited by misfortune, to make any further exertions of valour. On the 18th of June the Britiſh general arrived at Fort St John's, which he found abandoned and burnt. Chamblee had ſhared the ſame fate, as well as all the veſſels that were not capable of being dragged up againſt the current of the river. It was thought that they would have made ſome reſiſtance at Nut Iſland, the entrance to Lake Champlain; but this alſo they had abandoned, and retreated acroſs the lake to Crown Point, whither they could not be immediately followed. Thus was the province of Canada entirely evacuated by the Americans; whoſe loſs in their retreat from Quebec was calculated at not leſs than 1000 men, of whom 400 fell at once into the hands of the enemy at a place called the Cedars, about 50 miles above Montreal. General Sullivan, however, who conducted this retreat after the affair of General Thomſon, was acknowledged to have had great merit in what he did, and received the thanks of congreſs accordingly.

223 The provincials purſued by General Burgoyne;

224 but eſcape to Crown Point.

This bad ſucceſs in the north, however, was ſomewhat compenſated by what happened in the ſouthern colonies.—We have formerly taken notice that Mr Martin, governor of North Carolina, had been obliged to leave his province, and take refuge on board a man of war. Notwithſtanding this, he did not deſpair of reducing it again to obedience. For this purpoſe he applied to the Regulators, a daring ſet of banditti, who lived in a kind of independent ſtate; and though conſidered by government as rebels, yet had never been moleſted, on account of their numbers and known ſkill in the uſe of fire-arms. To the chiefs of theſe people commiſſions were ſent, in order to raiſe ſome regiments; and Colonel Macdonald, a brave and enterpriſing officer, was appointed to command them. In the month of February he erected the king's ſtandard, iſſued proclamations, &c. and collected ſome forces, expecting to be ſoon joined by a body of regular troops who were known to be ſhipped from Britain to act againſt the ſouthern colonies. The Americans, ſenſible of their danger, deſpatched immediately what forces

225 An inſurrection in North Carolina in favour of Britain.

America. they had to act againſt the royaliſts, at the ſame time that they diligently exerted themſelves to ſupport theſe with ſuitable reinforcements. Their preſent force was commanded by a General Moore, whoſe numbers were inferior to Macdonald; for which reaſon the latter ſummoned him to join the king's ſtandard under pain of being treated as a rebel. But Moore, being well provided with cannon, and conſcious that nothing could be attempted againſt him, returned the compliment, by acquainting Colonel Macdonald, that if he and his party would lay down their arms, and ſubſcribe an oath of fidelity to congreſs, they ſhould be treated as friends; but if they perſiſted in an undertaking for which it was evident they had not ſufficient ſtrength, they could not but expect the ſevereſt treatment. In a few days General Moore found himſelf at the head of 8000 men, by reaſon of the continual ſupplies which daily arrived from all parts. The royal party amounted only to 2000, and they were deſtitute of artillery, which prevented them from attacking the enemy while they had the advantage of numbers. They were now therefore obliged to have recourſe to a deſperate exertion of perſonal valour; by dint of which they effected a retreat for 80 miles to Moor's Creek, within 16 miles of Wilmington. Could they have gained this place, they expected to have been joined by Governor Martin and General Clinton, who had lately arrived with a conſiderable detachment. But Moore with his army purſued them ſo cloſe, that they were obliged to attempt the paſſage of the creek itſelf, though a conſiderable body of the enemy, under the command of Colonel Coſwell, with fortifications well planted with cannon, was poſted on the other ſide. On attempting the creek, however, it was found not to be fordable. They were obliged therefore to croſs over a wooden bridge which the provincials had not time to deſtroy entirely. They had, however, by pulling up part of the planks, and greaſing the remainder in order to render them ſlippery, made the paſſage ſo difficult, that the royaliſts could not attempt it. In this ſituation they were, on the 27th of February, attacked by Moore, with his ſuperior army, and totally defeated with the loſs of their general and moſt of their leaders, as well as the beſt and braveſt of their men.

226 The royaliſts entirely defeated.

Thus was the power of the provincials eſtabliſhed in North Carolina. Nor were they leſs ſucceſsful in the province of Virginia; where Lord Dunmore, having long continued an uſeleſs predatory war, was at laſt driven from every creek and road in the province. The people he had on board were diſtreſſed to the higheſt degree by confinement in ſmall veſſels. The heat of the ſeaſon, and the numbers crowded together, produced a peſtilential fever, which made great havock, eſpecially among the blacks. At laſt, finding themſelves in the utmoſt hazard of periſhing by famine as well as by diſeaſe, they ſet fire to the leaſt valuable of their veſſels, reſerving only about 50 for themſelves, in which they bade a final adieu to Virginia, ſome ſailing to Florida, ſome to Bermuda, and the reſt to the Weſt Indies.

227 Lord Dunmore finally driven out of Virginia.

In South Carolina the provincials had a more formidable enemy to deal with. A ſquadron, whoſe object was the reduction of Charleſtown, had been fitted out in December 1775; but by reaſon of unfavourable weather did not reach Cape Fear in North Carolina till the month of May 1776: and here it met with further obſtacles till the end of the month. Thus the Americans, always noted for their alertneſs in raiſing fortifications, had time to ſtrengthen thoſe of Charleſtown in ſuch a manner as rendered it extremely difficult to be attacked. The Britiſh ſquadron conſiſted of two 50 gun ſhips, four of 30 guns, two of 20, an armed ſchooner and bomb-ketch; all under the command of Sir Peter Parker. The land forces were commanded by Lord Cornwallis, with Generals Clinton and Vaughan. As they had yet no intelligence of the evacuation of Boſton, General Howe deſpatched a veſſel to Cape Fear with ſome inſtructions; but it was too late; and in the beginning of June the ſquadron anchored off Charleſtown bar. Here they met with ſome difficulty in croſſing, being obliged to take out the guns from the two large ſhips, which were, notwithſtanding, ſeveral times in danger of ſticking faſt. The next obſtacle was a ſtrong fort on Sullivan's Iſland, ſix miles eaſt from Charleſtown; which, though not completely finiſhed, was very ſtrong. However, the Britiſh generals reſolved without heſitation to attack it; but though an attack was eaſy from the ſea, it was very difficult to obtain a co-operation of the land forces. This was attempted by landing them on Long Iſland, adjacent to Sullivan's Iſland on the eaſt, from which it is ſeparated by a very narrow creek, ſaid not to be above two feet deep at low water. Oppoſite to this ford the provincials had poſted a ſtrong body of troops, with cannon and intrenchments; while General Lee was poſted on the main land, with a bridge of boats betwixt that and Sullivan's Iſland, ſo that he could at pleaſure ſend reinforcements to the troops in the fort on Sullivan's Iſland.

228 Britiſh armament ſent againſt Charleſtown.

On the part of the Britiſh, ſo many delays occurred, that it was the 28th of June before matters were in readineſs for an attack; and by this time the provincials had abundantly provided for their reception. On the morning of that day the bomb-ketch began to throw ſhells into Fort Sullivan, and about mid-day the two 50 gun ſhips, and 30 gun frigates came up and began a ſevere fire. Three other frigates were ordered to take their ſtation between Charleſtown and the fort, in order to enfilade the batteries, and cut off the communication with the main land; but through the ignorance of the pilots they all ſtuck faſt; and though two of them were diſentangled, they were found to be totally unfit for ſervice: the third was burnt that ſhe might not fall into the hands of the enemy.

229 The fleet make a ſurprious attack.

The attack was therefore confined to the five armed ſhips and bomb-ketch, between whom and the fort a moſt dreadful fire enſued. The Briſtol ſuffered exceſſively. The ſpring ſon her cable being ſhot away, ſhe was for ſome time entirely expoſed to the enemy's fire. As the enemy poured in great quantities of red-hot balls, ſhe was twice in flames. The captain (Mr Morris), after receiving five wounds, was obliged to go below deck in order to have his arm amputated. After undergoing this operation he returned to his place, where he received another wound, but ſtill refuſed to quit his ſtation: at laſt he received a red-hot ball in his belly, which inſtantly put an end to his life. Of all the officers and ſeamen who ſtood on the quarter-deck of this veſſel, not one eſcaped without a wound excepting Sir Peter Parker alone; whoſe intrepidity and preſence

230 Bravery of Captain Morris.

America. presence of mind on this occaſion were very remarkable. The engagement laſted till darkneſs put an end to it.
231 The British repulſed. Little damage was done by the Britiſh, as the works of the enemy lay ſo low that many of the ſhot flew over; and the fortifications, being compoſed of palm-trees mixed with earth, were extremely well calculated to reſiſt the impreſſion of cannon. During the height of the attack, the provincial batteries remained for ſome time ſilent, ſo that it was concluded that they had been abandoned; but this was found to proceed only from want of powder; for as ſoon as a ſupply of this neceſſary article was obtained, the firing was reſumed as briſk as before. During the whole of this deſperate engagement it was found impoſſible for the land forces to give the leaſt aſſiſtance to the fleet. The enemy's works were found to be much ſtronger than they had been imagined, and the depth of water effectually prevented them from making any attempt. In this unſucceſsful attack the killed and wounded on the part of the Britiſh amounted to about 200. The Briſtol and Experiment were ſo much damaged, that it was thought they could not have been got over the bar; however, this was at laſt accompliſhed by a very great exertion of naval ſkill, to the ſurpriſe of the provincials, who had expected to make them both prizes. On the American ſide the loſs was judged to have been very conſiderable, as moſt of their guns were diſmounted, and reinforcements had poured into the fort during the whole time of the action.

232 Americans form a navy. This year alſo, the Americans, having ſo frequently made trial of their valour by land, became deſirous of trying it by ſea alſo, and of forming a navy that might in ſome meaſure be able to protect their trade, and do eſſential hurt to the enemy. In the beginning of March Commodore Hopkins was deſpatched with five frigates to the Bahama iſlands, where he made himſelf maſter of the ordnance and military ſtores; but the gunpowder, which had been the principal object, was removed. On his return he captured ſeveral veſſels; but was foiled in his attempt on the Glaſgow frigate, which found means to eſcape notwithſtanding the efforts of his whole ſquadron.

The time, however, was now come when the fortitude and patience of the Americans were to undergo a ſevere trial. Hitherto they had been on the whole ſucceſsful in their operations: but now they were doomed to experience misfortune, miſery, and diſgrace; the enemy overrunning their country, and their own armies not able to face them in the field. The province of New York, as being the moſt central colony, and moſt acceſſible by ſea, was pitched upon for the object
233 Armament ſent againſt New York of the main attack. The force ſent againſt it conſiſted of 6 ſhips of the line, 30 frigates, beſides other armed veſſels, and a vaſt number of tranſports. The fleet was commanded by Lord Howe, and the land forces by his brother General Howe, who was now at Halifax. The latter, however, a conſiderable time before his brother arrived, had ſet ſail from Halifax, and lay before New York, but without attempting to commence hoſtilities until he ſhould be joined by his brother. The Americans had, according to cuſtom, fortified New York, and the adjacent iſlands, in an
234 General Howe lands on Staten Iſland. extraordinary manner. However, General Howe was ſuffered to land his troops on Staten Iſland, where he was ſoon joined by a number of the inhabitants. About the middle of July, Lord Howe arrived with the grand armament; and being one of the commiſſioners appointed to receive the ſubmiſſion of the coloniſts, he publiſhed a circular letter to this purpoſe to the ſeveral governors who had lately been expelled from their provinces, deſiring them to make the extent of his commiſſion, and the powers he was inveſted with by parliament, as public as poſſible. Here, however, congreſs ſaved him trouble, by ordering his letter and declaration to be publiſhed in all the newſpapers, that every one, as they ſaid, might ſee the inſidiouſneſs of the Britiſh miniſtry, and that they had nothing to truſt to beſides the exertion of their own valour. America.

235 General Waſhington refuſes a letter from Lord Howe. Lord Howe next ſent a letter to General Waſhington; but as it was directed "To George Waſhington, Eſq;" the general refuſed to accept of it, as not being directed in the ſtyle ſuitable to his ſtation. To obviate this objection, Adjutant-general Paterſon was ſent with another letter, directed "To General Waſhington, &c. &c. &c." But though a very polite reception was given the bearer, General Waſhington utterly refuſed the letter; nor could any explanation of the adjutant induce him to accept of it. The only intereſting part of the converſation was that relating to the powers of the commiſſioners, of which Lord Howe was one. The adjutant told him, that theſe powers were very extenſive; that the commiſſioners were determined to exert themſelves to the utmoſt, in order to bring about a reconciliation; and that he hoped the general would conſider this viſit as a ſtep towards it. General Waſhington replied, That it did not appear that theſe powers conſiſted in any thing elſe than granting pardons; and as America had committed no offence, ſhe aſked no forgiveneſs, and was only defending her unqueſtionable rights.

236 Hoſtilities commence. The deciſion of every thing being now, by conſent of both parties, left to the ſword, no time was loſt, but hoſtilities commenced as ſoon as the Britiſh troops could be collected. This, however, was not done before the month of Auguſt; when they landed without any oppoſition on Long Iſland, oppoſite to the ſhore of Staten Iſland. General Putnam, with a large body
237 Situation of the Britiſh and American armies. of troops, lay encamped and ſtrongly fortified on a peninſula on the oppoſite ſhore, with a range of hills between the armies, the principal paſs of which was near a place called *Flat-buſh*. Here the centre of the Britiſh army conſiſting of Heſſians, took poſt; the left wing, under General Grant, lying near the ſhore; and the right, conſiſting of the greater part of the Britiſh forces, lay under Lord Percy, Cornwallis, and General Clinton. Putnam had ordered the paſſes to be ſecured by large detachments, which was executed as to thoſe at hand; but one of the utmoſt importance, that lay at a diſtance, was entirely neglected. This gave an opportunity to a large body of troops under Lord Percy and Clinton to paſs the mountains and attack the Americans in the rear, while they were engaged with the Heſſians in front. Through this piece of negligence their defeat became inevitable. Thoſe who were engaged with the Heſſians firſt perceived their miſtake, and began a retreat towards their camp; but the paſſage was intercepted by the Britiſh troops, who drove them back into the woods. Here they were met by the Heſſians; and thus were they for many hours ſlaughtered between the two parties, no

America. way of eſcape remaining but by breaking through the Britiſh troops, and thus regaining their camp. In this attempt many periſhed; and the right wing, engaged with General Grant, ſhared the ſame fate. The victory was complete; and the Americans loſt on this fatal day (Auguſt 27th) between 3000 and 4000 men, of whom 2000 were killed in the battle or purſuit. Among theſe a regiment, conſiſting of young gentlemen of fortune and family in Maryland, was almoſt entirely cut in pieces, and of the ſurvivors not one eſcaped without a wound.

238 The Americans defeated with great ſlaughter.

The ardour of the Britiſh troops was now ſo great, that they could ſcarcely be reſtrained from attacking the lines of the provincials; but for this there was now no occaſion, as it was certain they could not be defended. Of the Britiſh only 61 were killed in this engagement, and 257 wounded. Eleven hundred of the enemy, among whom were three generals, were taken priſoners.

239 They abandon their camp in the night.

As none of the American commanders thought it proper to riſk another attack, it was reſolved to abandon their camp as ſoon as poſſible. Accordingly on the night of the 29th of Auguſt, the whole of the continental troops were ferried over with the utmoſt ſecrecy and ſilence; ſo that in the morning the Britiſh had nothing to do but take poſſeſſion of the camp and artillery which had been abandoned.

240 Lord Howe ſends a meſſage to congreſs,

This victory, though complete, was very far from being ſo deciſive as the conquerors imagined. Lord Howe, ſuppoſing that it would be ſufficient to intimidate the congreſs into ſome terms, ſent General Sullivan, who had been taken priſoner in the late action, to congreſs, with a meſſage, importing, that though he could not conſiſtently treat with them as a legal aſſembly, yet he would be very glad to confer with any of the members in their private capacity; ſetting forth at the ſame time the nature and extent of his powers as commiſſioner. But the congreſs were not as yet ſufficiently humbled to derogate in the leaſt from the dignity of character they had aſſumed. They replied, That the congreſs of the free and independent ſtates of America could not conſiſtently ſend any of its members in another capacity than that which they had publicly aſſumed; but as they were extremely deſirous of reſtoring peace to their country upon equitable conditions, they would appoint a committee of their body to wait upon him, and learn what propoſals he had to make.

241 and is waited on by a committee.

This produced a new conference. The committee appointed by congreſs was compoſed of Dr Franklin, Mr Adams, and Mr Rutledge. They were very politely received by his lordſhip; but the conference proved as fruitleſs as before independency had been declared, and the final anſwer of the deputies was, That they were extremely willing to enter into any treaty with Great Britain that might conduce to the good of both nations, but that they would not treat in any other character than that of independent ſtates. This poſitive declaration inſtantly put an end to all hopes of reconciliation; and it was reſolved to proſecute the war with the utmoſt vigour. Lord Howe, after publiſhing a manifeſto, in which he declared the refuſal of congreſs, and that he himſelf was willing to confer with all well-diſpoſed perſons about the means of reſtoring public tranquillity, ſet about the moſt proper methods for

242 The conference terminates ineffectually.

reducing the city of New York. Here the provincial troops were poſted, and from a great number of batteries kept continually annoying the Britiſh ſhipping. The Eaſt River lay between them, of about 1200 yards in breadth, which the Britiſh troops were extremely deſirous of paſſing. At laſt the ſhips having, after an inceſſant cannonade of ſeveral days, ſilenced the moſt troubleſome batteries, a body of troops was ſent up the river to a bay, about three miles diſtant, where the fortifications were leſs ſtrong than in other places. Here having driven off the provincials by the cannon of the fleet, they marched directly towards the city; but the enemy, finding that they ſhould now be attacked on all ſides, abandoned the city, and retired to the north of the iſland, where their principal force was collected. In their paſſage thither they ſkirmiſhed with the Britiſh, but carefully avoided a general engagement; and it was obſerved that they did not behave with that ardour and impetuous valour which had hitherto marked their character.

243 New York abandoned by the provincials.

244 Situation of the Britiſh and American armies.

The Britiſh and provincial armies were not now above two miles diſtant from each other. The former lay encamped from ſhore to ſhore for an extent of two miles, being the breadth of the iſland, which, though 15 miles long, exceeds not two in any part in breadth. The provincials, who lay directly oppoſite, had ſtrengthened their camp with many fortifications; at the ſame time, being maſters of all the paſſes and defiles betwixt the two camps, they were enabled to defend themſelves againſt an army much more numerous than their own: and they had alſo ſtrongly fortified a paſs called *King's Bridge*, whence they could ſecure a paſſage to the continent in caſe of any misfortune. Here General Waſhington, in order to inure the provincials to actual ſervice, and at the ſame time to annoy the enemy as much as poſſible, employed his troops in continual ſkirmiſhes; by which it was obſerved that they ſoon recovered their ſpirits, and behaved with their uſual boldneſs.

As the ſituation of the two armies was now highly inconvenient for the Britiſh generals, it was reſolved to make ſuch movements as might oblige General Waſhington to relinquiſh his ſtrong ſituation. The poſſeſſion of New York had been leſs beneficial than was expected. It had been concerted among the provincials, that the city ſhould be burnt at the time of evacuation, but as they were forced to depart with precipitation, they were prevented from putting the ſcheme in execution. In a few days, however, it was attempted by ſome who had been left behind for that purpoſe. Taking advantage of a high wind and dry weather, the town was ſet on fire in ſeveral places at once, by means of combuſtibles properly placed for that purpoſe; and notwithſtanding the moſt active exertions of the ſoldiery and ſailors, a fourth part of the city was conſumed.

245 New York ſet on fire by the provincials.

On this occaſion the Britiſh were irritated to the higheſt degree; and many perſons, ſaid to be incendiaries, were without mercy thrown into the flames. It was determined to force the provincial army to a greater diſtance, that they might have it leſs in their power, by any emiſſaries, to engage others in a ſimilar attempt. For this purpoſe, General Howe having left Lord Percy with ſufficient force to garriſon New York, he embarked his army in flat-bottomed boats, by which they

America.

they were conveyed through the dangerous paſſage called *Hell Gate*, and landed near the town of Weſt Cheſter, lying on the continent towards Connecticut. Here, having received a ſupply of men and proviſions, they moved to New Rochelle, ſituated on the ſound which ſeparates Long Iſland from the continent. After this, receiving ſtill freſh reinforcements, they made ſuch movements as threatened to diſtreſs the provincials very much, by cutting off their convoys of proviſions from Connecticut, and thus force them to an engagement. This, however, General Waſhington determined at all events to avoid. He therefore extended his forces into a long line oppoſite to the way in which the enemy marched, keeping the Bronx, a river of conſiderable magnitude, between the two armies, with the North River on his rear. Here again the provincials continued for ſome time to annoy and ſkirmiſh with the royal army, until at laſt, by ſome other manœuvres, the Britiſh general found means to attack them advantageouſly at a place called the *White Plains*, and drove them from ſome of their poſts. The victory on this occaſion was much leſs complete than the former; however it obliged the provincials once more to ſhift their ground, and to retreat farther up the country. General Howe purſued for ſome time; but at laſt finding all his endeavours vain to bring the Americans to a pitched battle, he determined to give over ſuch an uſeleſs chaſe, and employ himſelf in reducing the forts which the provincials ſtill retained in the neighbourhood of New York. In this he met with the moſt complete ſucceſs. The Americans, on the approach of the king's forces, retreated from King's Bridge into Fort Waſhington; and this, as well as Fort Lee, which lay in the neighbourhood, was quickly reduced, though the garriſon made their eſcape. Thus the Jerſeys were laid entirely open to the incurſions of the Britiſh troops; and ſo fully were theſe provinces taken poſſeſſion of by the royal army, that its winter quarters extended from New Brunſwick to the river Delaware. Had any number of boats been at hand, it is probable that Philadelphia would now have fallen into their hands. All theſe, however, had been carefully removed by the Americans. In lieu of this enterpriſe, Sir Henry Clinton undertook an expedition to Rhode Iſland, and became maſter of it without loſing a man. His expedition was alſo attended with this further advantage, that the American fleet under Commodore Hopkins was obliged to ſail as far as poſſible up the river Providence, and thus remained entirely uſeleſs.

246 General Waſhington obliged to move farther from New York.

247 Is defeated at the White Plains.

248 The Jerſeys entirely overrun by the Britiſh troops.

249 Rhode Iſland taken.

The ſame ill ſucceſs continued to attend the Americans in other parts. After their expulſion from Canada, they had croſſed the lake Champlain, and taken up their quarters at Crown Point, as we have already mentioned. Here they remained for ſome time in ſafety, as the Britiſh had no veſſels on the lake, and conſequently General Burgoyne could not purſue them. To remedy this deficiency, there was no poſſible method, but either to conſtruct veſſels on the ſpot, or take to pieces ſome veſſels already conſtructed, and drag them up the river into the lake. This, however, was effected in no longer a ſpace than three months; and the Britiſh general, after incredible toil and ſtrenuity, was maſter of poſſeſſion of a great number of veſſels, by which means he was enabled to purſue his enemies, and invade them in his turn. The labour undergone at this time by the ſea and land forces muſt indeed have been prodigious; ſince there were conveyed over land, and dragged up the rapids of St Lawrence, no fewer than 30 large long boats, 400 batteaux, beſides a vaſt number of flat-bottomed boats, and a gondola of 30 tons. The intent of the expedition was to puſh forward before winter to Albany, where the army would take up its winter quarters, and next ſpring effect a junction with that under General Howe, when it was not doubted that the united force and ſkill of theſe two commanders would ſpeedily put a termination to the war.

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250 The Americans ſwept from Lake Champlain.

By reaſon of the difficulties with which the equipment of this fleet had been attended, it was the beginning of October before the expedition could be undertaken. It was now, however, by every judge allowed to be completely able to anſwer the purpoſe for which it was intended. It conſiſted of one large veſſel with three maſts, carrying 18 twelve pounders; two ſchooners, the one carrying 14, the other 12 ſix pounders; a large flat-bottomed radeau with 6 twenty-four and 6 twelve pounders, and a gondola with 8 nine pounders. Beſides theſe were 20 veſſels of a ſmaller ſize, called *gun-boats*, carrying each a piece of braſs ordnance from 9 to 24 pounders, or howitzers. Several long-boats were fitted out in the ſame manner; and beſides all theſe, there was a vaſt number of boats and tenders, of various ſizes, to be uſed as tranſports for the troops and baggage. It was manned by a number of ſelect ſeamen, and the guns were to be ſerved by a detachment from the corps of artillery; the officers and ſoldiers appointed for this expedition were alſo choſen out of the whole army.

251 Deſtroy the naval force of the provincials.

To oppoſe this formidable armament the Americans had only a very inconſiderable force, commanded by General Arnold; who, after engaging part of the Britiſh fleet for a whole day, took advantage of the darkneſs of the night to ſet ſail without being perceived, and next morning was out of ſight: but he was ſo cloſely purſued by the Britiſh, that on the ſecond day after he was overtaken, and forced to a ſecond engagement. In this he behaved with great gallantry; but his force being very inferior to that of the enemy, he was obliged to run his ſhips aſhore and ſet them on fire. A few only eſcaped to Lake George; and the garriſon of Crown Point having deſtroyed or carried off every thing of value, retired to Ticonderago. Thither General Carleton intended to have purſued them; but the difficulties he had to encounter appeared ſo many and ſo great, that it was thought proper to march back into Canada, and deſiſt from any further operations till next ſpring.

252 The Americans almoſt entirely diſperſed.

Thus the affairs of the Americans ſeemed everywhere going to wreck: even thoſe who had been moſt ſanguine in their cauſe began to waver. The time, alſo, for which the ſoldiers had enliſted themſelves was now expired; and the bad ſucceſs of the preceding campaign had been ſo very diſcouraging, that no perſon was willing to engage himſelf during the continuance of a war, of which the event ſeemed to be ſo doubtful. In conſequence of this, therefore, General Waſhington found his army daily decreaſing in ſtrength; ſo that from 30,000, of whom it conſiſted when General Howe landed on Staten Iſland, ſcarce a tenth part could now be muſtered. To aſſiſt the chief commander as much

America. as poſſible, General Lee had collected a body of forces in the north; but on his way ſouth ward, having imprudently taking up his lodging at ſome diſtance from his troops, information was given to Colonel Harcourt, who happened at that time to be in the neighbourhood, and Lee was made priſoner. The loſs of this general was much regretted, the more eſpecially as he was of ſuperior quality to any priſoner in the poſſeſſion of the coloniſts, and could not therefore be exchanged. Six field officers were offered in exchange for him, and refuſed; and the congreſs was highly irritated as its being reported that he was to be treated as a deſerter, having been a half-pay officer in the Britiſh ſervice at the commencement of the war. In conſequence of this they iſſued a proclamation, threatening to retaliate on the priſoners in their poſſeſſion whatever puniſhment ſhould be inflicted on any of thoſe taken by the Britiſh, and eſpecially that their conduct ſhould be regulated by the treatment of General Lee.

253 General Lee taken priſoner.

254 Continental army for 1777.

In the mean time they proceeded with the moſt indefatigable diligence to recruit their army, and bound their ſoldiers to ſerve for a term of three years, or during the continuance of the war. The army deſigned for the enſuing campaign was to conſiſt of 88 battalions; of which each province was to contribute its quota; and 20 dollars were offered as a bounty to each ſoldier, beſides an allotment of lands at the end of the war. In this allotment it was ſtipulated, that each ſoldier ſhould have 100 acres; an enſign 150; a lieutenant 200; a captain 300; a major 400; a lieutenant-colonel 450; and a colonel 500. No lands were promiſed to thoſe who inliſted only for three years. All officers or ſoldiers diſabled through wounds received in the ſervice were to enjoy half-pay during life. To defray the expence, congreſs borrowed five millions of dollars at five per cent.; for payment of which the United States became ſurety. At the ſame time, in order to animate the people to vigorous exertions, a declaration was publiſhed, in which they ſet forth the neceſſity there was for taking proper methods to enſure ſucceſs in their cauſe: they endeavoured to palliate as much as poſſible the misfortunes which had already happened; and repreſented the true cauſe of the preſent diſtreſs to be the ſhort term of inliſtment.

This declaration, together with the imminent danger of Philadelphia, determined the Americans to exert themſelves to the utmoſt in order to reinforce General Waſhington's army. They ſoon received farther encouragement, however, by an exploit of that general againſt the Heſſians. As the royal army extended in different cantonments for a great way, General Waſhington, perceiving the imminent danger to which Philadelphia was expoſed, reſolved to make ſome attempt on thoſe diviſions of the enemy which lay neareſt that city. Theſe happened to be the Heſſians, who lay in three diviſions, the laſt only 20 miles diſtant from Philadelphia. On the 25th of December, having collected as conſiderable a force as he could, he ſet out with an intent to ſurpriſe that body of the enemy who lay at Trenton. His army was divided into three bodies; one of which he ordered to croſs the Delaware at Trenton Ferry, a little below the town; the ſecond at a good diſtance below, at a place called *Bordentown*, where the ſecond diviſion of Heſſians was placed; while he himſelf with the third, directing his courſe to a ferry ſome miles above Trenton, intended to have paſſed it at midnight, and attack the Heſſians at break of day. But by reaſon of various impediments, it was eight in the morning before he could reach the place of his deſtination. The enemy, however, did not perceive his approach till they were ſuddenly attacked. Colonel Rahle, who commanded them, did all that could be expected from a brave and experienced officer; but every thing was in ſuch confuſion, that no efforts of valour or ſkill could now retrieve matters. The colonel himſelf was mortally wounded, his troops were entirely broken, their artillery ſeized, and about 1000 taken priſoners.

This action, though ſeemingly of no very deciſive nature, was ſufficient at that time to turn the fortune of war in favour of America. It tended greatly to leſſen the fear which the provincials had of the Heſſians, at the ſame time that it equally abated the confidence which the Britiſh had till now put in them. Reinforcements came in to General Waſhington's army from all quarters; ſo that he was ſoon in a condition to leave Philadelphia, and take up his quarters at Trenton. Emboldened by his ſucceſs, he determined to make an attempt on a diviſion of the Britiſh forces ſtationed at Maidenhead, a town ſituated half way between Trenton and Princetown. This conſiſted of three regiments under the command of Colonel Mawhood, an officer of great merit. The troops were ſurpriſed on their march; but though they were ſeparately ſurrounded and attacked by a force ſo vaſtly ſuperior, they charged the enemy ſo reſolutely with their bayonets, that they effected a retreat. Theſe attempts of the Americans, however, with the hoſtile diſpoſition of the people, ſhowed the impoſſibility of maintaining poſts ſo far advanced in the enemy's country; ſo that it was reſolved to retreat towards Brunſwick, in order to prevent it, with the troops and magazines it contained, from falling into the hands of the provincials. General Waſhington loſt no opportunity of recovering what had been loſt; and by dividing his army into ſmall parties, which could be reunited on a few hours warning, he in a manner entirely covered the country with it, and repoſſeſſed himſelf of all the important places.

255 Another victory over the Britiſh regiments,

256 but they make good their retreat.

Thus ended the campaign of 1776, which ſcarce any real advantage, other than the poſſeſſion of the city of New York, and of a few fortreſſes in its neighbourhood; where the troops were conſtrained to act with as much circumſpection as if they had been beſieged by a victorious army, inſtead of being themſelves the conquerors.

257 Expedition againſt New York.

The army at New York began in 1777 to exerciſe a kind of predatory war, by ſending out parties to deſtroy magazines, make incurſions, and take or deſtroy ſuch forts as lay on the banks of rivers, to which their great command of ſhipping gave them eaſy acceſs. In this they were generally ſucceſsful: the provincial magazines at Peek's Hill, a place about 50 miles diſtant from New York, were deſtroyed, the town of Dunbury in Connecticut burnt, and that of Ridgefield in the ſame province was taken poſſeſſion of. In returning from the laſt expedition, however, the Britiſh were greatly haraſſed by the enemy under Generals Arnold, Wooſter, and Sullivan; but they made good their retreat in ſpite of all oppoſition, with the loſs of only 170 killed

America. killed and wounded. On the American ſide the loſs was much greater; General Wooſter was killed, and Arnold in the moſt imminent danger. On the other hand, the Americans deſtroyed the ſtores at Sagg harbour, in Long Iſland, and made priſoners of all who defended the place.

As this method of making war, however, could anſwer but little purpoſe, and favoured more of the barbarous incurſions of ſavages than of a war carried on by a civilized people, it was reſolved to make an attempt on Philadelphia. At firſt it was thought that this could be done through the Jerſeys; but General Washington had received ſuch large reinforcements, and poſted himſelf ſo ſtrongly, that it was found to be impracticable. Many ſtratagems were uſed to draw him from this ſtrong ſituation, but without ſucceſs; ſo that it was found neceſſary to make the attempt on Philadelphia by ſea. While the preparations neceſſary for this expedition were going forward, the Americans found means to make amends for the capture of General Lee by that of General Preſcot, who was ſeized in his quarters with his aid-de-camp, in much the ſame manner as General Lee had been. This was exceedingly mortifying to the general himſelf, as he had not long ago ſet a price upon General Arnold himſelf, by offering a ſum of money to any one that apprehended him; which the latter anſwered by ſetting a lower price upon General Preſcot.

258 General Preſcot taken priſoner.

The month of July was far advanced before the preparations for the expedition againſt Philadelphia were completed; and it was the 23d before the fleet was able to ſail from Sandy Hook. The force employed in this expedition conſiſted of 36 battalions of Britiſh and Heſſians, a regiment of light horſe, and a body of loyaliſts raiſed at New York. The remainder of theſe, with 17 battalions, and another body of light horſe, was ſtationed at New York under Sir Henry Clinton. Seven battalions were ſtationed at Rhode Iſland. After a week's ſailing they arrived at the mouth of the Delaware; but there received certain intelligence, that the navigation of the river was ſo effectually obſtructed, that no poſſibility of forcing a paſſage remained. Upon this it was reſolved to proceed farther ſouthward to Cheſapeak bay in Maryland, from whence the diſtance to Philadelphia was not very great, and where the provincial army would find leſs advantage from the nature of the country than in the Jerſeys.

259 The fleet ſails for Philadelphia.

The navigation from Delaware to Cheſapeak took up the beſt part of the month of Auguſt, and that up the bay itſelf was extremely difficult and tedious. At laſt, having ſailed up the river Elk as far as was practicable, the troops were landed without oppoſition, and ſet forward on their intended expedition. On the news of their arrival in Cheſapeak, General Waſhington left the Jerſeys, and haſtened to the relief of Philadelphia; and in the beginning of September met the royal army at Brandy-wine Creek, about mid-way between the head of the Elk and Philadelphia. Here he adhered to his former method of ſkirmiſhing and harraſſing the royal army on its march; but as this proved inſufficient to ſtop its progreſs, he retired to that ſide of the creek next to Philadelphia with an intent to diſpute the paſſage. This brought on a general engagement on the 11th of September, in which the Americans were worſted through the ſuperior diſcipline of the Britiſh troops; and it was only through the approach of night that they were ſaved from being entirely deſtroyed. On this occaſion the provincials loſt about 1000 in killed and wounded, beſides 400 taken priſoners.

260 The navy and army land at the head of the Elk.

261 The Americans defeated.

The loſs of this battle proved alſo the loſs of Philadelphia. General Waſhington retired towards Lancaſter, an inland town at a conſiderable diſtance from Philadelphia. Here, however, the Britiſh general took ſuch meaſures as muſt have forced the provincials to a ſecond engagement: but a violent rain, which laſted a day and a night, prevented his deſign. General Waſhington, though he could not prevent the loſs of Philadelphia, ſtill adhered to his original plan of diſtreſſing the royal party, by laying ambuſhes and cutting off detached parties: but in this he was leſs ſucceſsful than formerly; and one of his own detachments, which lay in ambuſh in a wood, were themſelves ſurpriſed and entirely defeated, with the loſs of 300 killed and wounded, beſides a great number taken, and all their arms and baggage.

262 An American detachment ſurpriſed and defeated with great ſlaughter.

General Howe now perceiving that the Americans would not venture another battle even for the ſake of their capital, took peaceable poſſeſſion of it on the 26th of September. His firſt care was then to cut off, by means of ſtrong batteries, the communication between the upper and lower parts of the river: which was executed notwithſtanding the oppoſition of ſome American armed veſſels; one of which, carrying 36 guns, was taken. His next taſk was to open a communication with it by ſea; and this was a work of no ſmall difficulty. A vaſt number of batteries and forts had been erected, and immenſe machines formed like *chevaux de frize*, from whence they took their name, ſunk in the river to prevent its navigation. As the fleet was ſent round to the mouth of the river in order to co-operate with the army, this work, however difficult, was accompliſhed; nor did the provincials give much oppoſition, as well knowing that all places of this kind were now untenable. General Waſhington, however, took the advantage of the royal army being divided to attack the camp of the principal diviſion of it that lay at German-town in the neighbourhood of Philadelphia. In this he met with very little ſucceſs; for though he reached the place of deſtination by three o'clock in the morning, the patrols had time to call the troops to arms. The Americans, notwithſtanding, made a very reſolute attack; but they were received with ſuch bravery, that they were compelled to abandon the attempt, and retreat in great diſorder; with the advantage, however, of carrying off their cannon, though purſued for a conſiderable way, after having 320 killed, 600 wounded, and upwards of 400 taken priſoners, among whom were 45 officers. On the Britiſh ſide, the loſs amounted to 430 wounded and priſoners, and 70 killed; but among the laſt were General Agnew and Colonel Bird, with ſome other excellent officers.

263 General Howe takes poſſeſſion of Philadelphia.

264 Royal army attacked at German-town.

265 The Americans defeated.

There ſtill remained two ſtrong forts on the Delaware to be reduced. Theſe were Mud Iſland and Red Bank. The various obſtructions which the Americans had thrown in the way rendered it neceſſary to bring up the Auguſta, a ſhip of the line, and the Merlin frigate, to the attack of Mud Iſland; but during the heat of action both were grounded. Upon this

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this the Americans ſent down four fire-ſhips, and directed the whole fire from their gallies againſt them. The former were rendered ineffectual by the courage and ſkill of the Britiſh ſeamen; but during the engagement both the Augufta and Merlin took fire and were burnt to aſhes, and the other ſhips obliged to withdraw. The enemy, encouraged by this unſucceſsful attempt, proceeded to throw new obſtructions in the way; but the Britiſh general having found means to convey a number of cannon and to erect batteries within gunſhot of the fort by land, and bringing up three ſhips of the line which mounted heavy cannon, the garriſon, after making a vigorous defence for one day, perceiving that preparations were making for a general aſſault on the next, abandoned the place in the night. Thoſe who defended Red Bank followed their example, and abandoned it on the approach of Lord Cornwallis. A great number of the American ſhipping now finding themſelves entirely deſtitute of any protection, failed up the river in the night time. Seventeen however remained, whoſe retreat was intercepted by a frigate and ſome armed veſſels; on which the Americans run them aſhore and burnt them, to prevent their falling into the enemy's hands.

265 Two Britiſh ſhips of war burnt.

267 All the forts near Philadelphia deduced.

Thus the campaign of 1777 in Pennſylvania concluded ſucceſsfully on the part of the Britiſh. In the north, however, matters wore a different aſpect. The expedition in that quarter had been projected by the Britiſh miniſtry as the moſt effectual method that could be taken to cruſh the colonies at once. The four provinces of New England had originally begun the confederacy againſt Britain, and were ſtill conſidered as the moſt active in the continuation of it; and it was thought, that any impreſſion made upon them, would contribute in an effectual manner to the reduction of all the reſt. For this purpoſe, an army of 4000 choſen Britiſh troops and 3000 Germans was put under the command of General Burgoyne; General Carleton was directed to uſe his intereſt with the Indians to perſuade them to join in this expedition; and the province of Quebec was to furniſh large parties to join in the ſame. The officers who commanded under General Burgoyne were General Philips of the artillery, Generals Frazer, Powell, and Hamilton, with the German officers Generals Reideſel and Speecht. The ſoldiers, as has already been obſerved, were all excellently diſciplined, and had been kept in their winter-quarters with all imaginable care, in order to prepare them for the expedition on which they were going. To aid the principal expedition, another was projected on the Mohawk river under Colonel St Leger, who was to be aſſiſted by Sir John Johnſon, ſon to the famous Sir William Johnſon, who had ſo greatly diſtinguiſhed himſelf in the war of 1755.

268 Expedition projected againſt New England.

269 General Burgoyne joined by the Indians.

On the 21ſt of June 1777, the army encamped on the weſtern ſide of the lake Champlain; where being joined by a conſiderable body of Indians, General Burgoyne made a ſpeech, in which he exhorted thoſe new allies to lay aſide their ferocious and barbarous manner of making war; to kill only ſuch as oppoſed them in arms; and to ſpare priſoners, with ſuch women and children as ſhould fall into their hands. After iſſuing a proclamation, in which the force of Britain and that which he commanded was ſet forth in very oſtentatious terms, the campaign opened with the ſiege of Ticonderago. The place was very ſtrong, and garriſoned by 6000 men under General [illegible]; nevertheleſs, the works were ſo extenſive, that even this number was ſcarce ſufficient to defend them properly. They had therefore omitted to fortify a ſteep [illegible] called Sugar Hill, the top of which commanded and effectually commanded the whole work; nearly [illegible] the ſteepneſs of the aſcent would be [illegible] to prevent the enemy from taking poſſeſſion of it. On the approach of the firſt diviſion of the army, the provincials abandoned and retired to their outworks; and to expedition were the Britiſh troops, that by the 5th of July every [illegible] was ſecured which was judged neceſſary for inveſting it completely. A road was ſoon after made to the very ſummit of that eminence which the Americans had conſidered as inacceſſible; and ſo much were they now diſcouraged, that they inſtantly abandoned the fort entirely, taking the road to Skeneſborough, a place to the ſouth of Lake George; while their [illegible], with what artillery and military ſtores they could carry off, were ſent to the ſame place by water. But the Britiſh generals were determined not to let them paſs ſo eaſily. Both were purſued, and both overtaken. Their armed veſſels conſiſted only of five gallies; two of which were taken, and three blown up; on which they ſet fire to their boats and fortifications at Skeneſborough. On this occaſion the provincials loſt 200 boats, 130 pieces of cannon, with all their proviſions and baggage. Their land forces under Colonel Francis made a brave defence againſt General Frazer, and being greatly ſuperior in number, had almoſt overpowered him, when General Reideſel with a large body of Germans came to his aſſiſtance. The enemy were now overpowered in their turn; and their commander being killed, they fled on all ſides with great precipitation. In this action 200 Americans were killed, as many taken priſoners, and above 600 wounded, many of whom periſhed in the woods for want of aſſiſtance.

271 Americans [illegible] by land and water.

During the engagement General Sinclair was at Caſtleton, about ſix miles from the place; but inſtead of going forward to Fort Anne, the next place of ſtrength, he repaired to the woods which lie between that fortreſs and New England. General Burgoyne, however, detached Colonel Hill with the ninth regiment, in order to intercept ſuch as ſhould attempt to retreat towards Fort Anne. On his way he met with a body of the enemy, ſaid to be ſix times as numerous as his own: but after an engagement of three hours, they were obliged to retire with great loſs. After ſo many diſaſters, deſpairing of being able to make any ſtand at Fort Anne, they ſet fire to it, and retired to Fort Edward. In all theſe engagements the loſs of killed and wounded in the royal army did not exceed 200 men.

272 They are [illegible] Fort Anne.

General Burgoyne was now obliged to ſuſpend his operations for ſome time, and wait at Skeneſborough for the arrival of his tents, proviſions, &c. but employed this interval in making roads through the country [illegible] about St Anne, and in clearing a paſſage for his troops to proceed againſt the enemy. This was attended with incredible toil; but all obſtacles were ſurmounted with equal patience and reſolution by the army. In ſhort, after undergoing the utmoſt difficulty that could be undergone, and making every exertion that man could

273 General Burgoyne makes his way to Fort [illegible] with great difficulty.

America. could make, he arrived with his army before Fort Edward about the end of July. Here General Schuyler had been for ſome time endeavouring to recruit the ſhattered American forces, and had been joined by General Sinclair with the remains of his army; the garriſon of Fort George alſo, ſituated on the lake of that name, had evacuated the place and retired to Fort Edward.

274 Americans retire to Saratoga.

But on the approach of the royal army, they retired from thence alſo, and formed their head-quarters at Saratoga. Notwithſtanding the great ſucceſſes of the Britiſh general, they ſhowed not the leaſt diſpoſition to ſubmit, but ſeemed only to conſider how they might make the moſt effectual reſiſtance. For this purpoſe, the militia was everywhere raiſed and draughted to join the army at Saratoga; and ſuch numbers of volunteers were daily added, that they ſoon began to recover from the terror into which they had been thrown. That they might have a commander whoſe abilities could be relied on, General Arnold was appointed, who repaired to Saratoga with a conſiderable train of artillery; but receiving intelligence that Colonel St Leger was proceeding with great rapidity in his expedition on the Mohawk river, he removed to Still-water, a place about half way between Saratoga and the junction of the Mohawk and Hudſon's river.

275 Fort Stanwix beſieged.

The colonel, in the mean time, had advanced as far as Fort Stanwix; the ſiege of which he preſſed with great vigour. On the 6th of Auguſt, underſtanding that a ſupply of proviſions, eſcorted by 800 or 900 men, was on the way to the fort, he deſpatched Sir John Johnſon

276 A detachment of Americans cut in pieces.

with a ſtrong detachment to intercept it. This he did ſo effectually, that, beſides intercepting the proviſions, 400 of its guard were ſlain, 200 taken, and the reſt eſcaped with great difficulty. The garriſon, however, were not to be intimidated by this diſaſter, nor by the threats or repreſentations of the colonel; on the contrary, they made ſeveral ſucceſsful ſallies under Colonel Willet, the ſecond in command; and this gentleman, in company with another, even ventured out of the fort, and, eluding the vigilance of the enemy, paſſed through them in order to haſten the march of General Arnold to their aſſiſtance.

The Indians deſert, and force the colonel to raiſe the ſiege.

Thus the affairs of Colonel St Leger ſeemed to be in no very favourable ſituation, notwithſtanding his late ſucceſs, and they were ſoon totally ruined by the deſertion of the Indians. They had been alarmed by the report of General Arnold's advancing with 2000 men to the relief of the fort; and while the colonel was attempting to give them encouragement, another report was ſpread, that General Burgoyne had been defeated with great ſlaughter, and was now flying before the provincials. On this he was obliged to do as they thought proper; and the retreat could not be effected without the loſs of the tents and ſome of the artillery and military ſtores.

278 General Burgoyne, on the mean time, notwithſtanding all the difficulties he had already ſuſtained, found that he muſt ſtill encounter more. The roads he had made with ſo much labour and pains were deſtroyed either by the wetneſs of the ſeaſon or by the enemy; ſo that the proviſions he brought from Fort George could not arrive at his camp without the moſt prodigious toil. On hearing of the ſiege of Fort Stanwix by Colonel St Leger, he determined to move forward, in hopes of enclоſing the enemy betwixt his own army and that of St Leger, or of obtaining the command of all the country between Fort Stanwix and Albany; or at any rate, a junction with Colonel St Leger would be effected, which could not but be attended with the moſt happy conſequences. The only difficulty was the want of proviſions; and this it was propoſed to remedy by reducing the provincial magazines at Bennington. For this purpoſe, Colonel Baum, a German officer of great bravery, was choſen, with a body of 500 men. The place was about twenty miles from Hudſon's river; and to ſupport Colonel Baum's party, the whole army marched up the river's bank, and encamped almoſt oppoſite to Saratoga, with the river betwixt it and that place. An advanced party was poſted at Batten Kill, between the camp and Bennington, in order to ſupport Colonel Baum. In their way the Britiſh ſeized a large ſupply of cattle and proviſions, which were immediately ſent to the camp; but the badneſs of the roads retarded their march ſo much, that intelligence of their deſign was ſent to Bennington. Underſtanding now that the American force was greatly ſuperior to his own, the colonel acquainted the general, who immediately deſpatched Colonel Breyman with a party to his aſſiſtance; but through the ſame cauſes that had retarded the march of Colonel Baum, this aſſiſtance could not arrive in time. General Starke, in the mean time, who commanded at Bennington, determined to attack the two parties ſeparately; and for this purpoſe advanced againſt Colonel Baum, whom he ſurrounded on all ſides and attacked with the utmoſt violence. The troops defended themſelves with great valour, but were to a man either killed or taken. Colonel Breyman, after a deſperate engagement, had the good luck to effect a retreat through the darkneſs of the night, which otherwiſe he could not have done, as his men had expended all their ammunition, being 40 rounds to each.

America.

279 Makes an attempt on the provincial magazines at Bennington.

280 Colonel Baum utterly defeated and taken priſoner.

281 Colonel Breyman defeated.

General Burgoyne, thus diſappointed in his attempt on Bennington, applied himſelf with indefatigable diligence to procure proviſions from Fort George; and having at length amaſſed a ſufficient quantity to laſt for a month, he threw a bridge of boats over the river Hudſon, which he croſſed about the middle of September, encamping on the hills and plains near Saratoga. As ſoon as he approached the provincial army, at this time encamped at Stillwater under General Gates, he determined to make an attack; for which purpoſe he put himſelf at the head of the central diviſion of his army, having General Fraſer and Colonel Breyman on the right, with Generals Reidefel and Phiips on the left. In this poſition he advanced towards the enemy on the 19th of September. But the Americans did not now wait to be attacked: on the contrary, they attacked the central diviſion with the utmoſt violence; and it was not until General Philips with the artillery came up that they could be repulſed. On this occaſion, though the Britiſh troops loſt only 330 killed and wounded, and the enemy no fewer than 1500, the former were very much alarmed at the obſtinate reſolution ſhown by the Americans. This did not, however, prevent them from advancing towards the enemy, and poſting themſelves the next day within cannon-ſhot of their lines. But their allies the Indians began to deſert in great numbers; and at the ſame time the general

282 The Americans attack the royal army;

283 and are with great difficulty repulſed.

284 The Indians deſert.

America. general was in the higheſt degree mortified by having no intelligence of any aſſiſtance from Sir Henry Clinton, as had been ſtipulated. He now received a letter from him, by which he was informed that Sir Henry intended to make a diverſion on the North River in his favour. This afforded but little comfort: however, he returned an anſwer by ſeveral truſty perſons whom he deſpatched different ways, ſtating his preſent diſtreſſed ſituation, and mentioning that the proviſions and other neceſſaries he had would only enable him to hold out till the 12th of October.

285 A letter from Sir Henry Clinton, with General Burgoyne's anſwer.

286 Expedition of the provincials againſt Ticonderago.

In the mean time the Americans, in order to cut off the retreat of the Britiſh army in the moſt effectual manner, undertook an expedition againſt Ticonderago; but were obliged to abandon the enterpriſe after having ſurpriſed all the outpoſts, and taken a great number of boats with ſome armed veſſels, and a number of priſoners. The army under General Burgoyne, however, continued to labour under the greateſt diſtreſſes; ſo that in the beginning of October he had been obliged to diminiſh the ſoldiers allowance. On the 7th of that month he determined to move towards the enemy. For this purpoſe he ſent a body of 1500 men to reconnoitre their left wing; intending, if poſſible, to break through it in order to effect a retreat. The detachment, however, had not proceeded far when a dreadful attack was made upon the left wing of the Britiſh army, which was with great difficulty preſerved from being entirely broken by a reinforcement brought up by General Fraſer, who was killed in the attack. After the troops had with the moſt deſperate efforts regained their camp, it was moſt furiouſly aſſaulted by General Arnold; who, notwithſtanding all oppoſition, would have forced the intrenchments, had he not received a dangerous wound, which obliged him to retire. Thus the attack failed on the left, but on the right the camp of the German reſerve was forced, Colonel Breyman killed, and his countrymen defeated with great ſlaughter, and the loſs of all their artillery and baggage.

287 They make a deſperate attack on the royal army;

288 Kill General Fraſer,

289 and defeat the Germans with great ſlaughter.

This was by far the heavieſt loſs the Britiſh army had ſuſtained ſince the action at Bunker's Hill. The liſt of killed and wounded amounted to near 1200, excluſive of the Germans; but the greateſt misfortune was, that the enemy had now an opening on the right and rear of the Britiſh forces, ſo that the army was threatened with entire deſtruction. This obliged General Burgoyne once more to ſhift his poſition, that the enemy might alſo be obliged to alter theirs. This was accompliſhed on the night of the 7th, without any loſs, and all the next day he continued to offer the enemy battle; but they were now too well aſſured of obtaining a complete victory, by cutting off all ſupplies from the Britiſh, to riſk a pitched battle. Wherefore they advanced on the right ſide, in order to encloſe him entirely; which obliged the general to direct a retreat towards Saratoga. But the enemy had now ſtationed a great force on the ford at Hudſon's river, ſo that the only poſſibility of retreat was by ſecuring a paſſage to Lake George; and to effect this, a body of workmen was detached, with a ſtrong guard, to repair the roads and bridges that led to Fort Edward. As ſoon as they were gone, however, the enemy ſeemed to prepare for an attack; which rendered it neceſſary to recal the guard, and the workmen being of courſe left America. expoſed could not proceed.

290 The royal army in danger of being ſurrounded.

In the mean time, the boats which conveyed proviſions down Hudſon's river were expoſed to the continual fire of the American markſmen, who took many of them; ſo that it became neceſſary to convey the proviſions over land. In this extreme danger it was reſolved to march by night to Fort Edward, forcing the paſſages at the fords either above or below the places; and in order to effect this the more eaſily, it was reſolved that the ſoldiers ſhould carry their proviſions on their backs, leaving behind their baggage and every other incumbrance. But before this could be executed, intelligence was received that the enemy had raiſed ſtrong intrenchments oppoſite to theſe fords, well provided with cannon, and that they had likewiſe taken poſſeſſion of the riſing ground between Fort George and Fort Edward, which in like manner was provided with cannon.

291 Attempt a retreat without ſucceſs.

292 Diſtreſſed ſituation of the royal army.

All this time the American army was increaſing by the continual arrival of militia and volunteers from all parts. Their parties extended all along the oppoſite bank of Hudſon's river, and ſome had even paſſed it in order to obſerve the leaſt movement of the Britiſh army. The whole force under General Gates was computed at 16,000 men, while the army under General Burgoyne ſcarce amounted to 6000; and every part of the camp was reached by the grape and rifle ſhot of the enemy, beſides a diſcharge from their artillery, which was almoſt inceſſant. In this ſtate of extreme diſtreſs and danger, the army continued with the greateſt conſtancy and perſeverance till the evening of the 13th of October, when an inventory of proviſions being taken, it was found that no more remained than what was ſufficient to ſerve for three days; and a council of war being called, it was unanimouſly determined that there was no method now remaining but to treat with the enemy.

293 It is obliged to capitulate.

In conſequence of this, a negotiation was opened next day, which ſpeedily terminated in the capitulation of the whole Britiſh army; the principal article of which was, that the troops were to have a free paſſage to Britain, on condition of not ſerving againſt America during the war. On this occaſion, General Gates ordered his army to keep within their camp while the Britiſh ſoldiers went to a place appointed for them to lay down their arms, that the latter might not have the additional mortification of being made ſpectacles in ſo melancholy an event. The number of thoſe who ſurrendered at Saratoga amounted to 5750, according to the American accounts; the liſt of ſick and wounded left in the camp when the army retreated to Saratoga, to 528; and the number of thoſe loſt by other accidents ſince the taking of Ticonderago, to near 3000. Thirty-five braſs field-pieces, 7000 ſtand of arms, clothing for an equal number of ſoldiers, with the tents, military cheſt, &c. conſtituted the booty on this occaſion.

295 Succeſsful expedition of Sir Henry Clinton.

Sir Henry Clinton, in the mean time, had ſailed up the North river, and deſtroyed the two forts called Montgomery and Clinton, with Fort Conſtitution, and another place called Continental Village, where were barracks for 2000 men. Several large cannon were carried away, beſides a number of ſmaller artillery, and a great quantity of ſtores and ammunition; a large

boom

America. boom and chain reaching acroſs the river from Fort Montgomery to a point of land called St Anthony's Nole, and which coſt not leſs than 70,000l. ſterling, were partly deſtroyed and partly carried away, as was alſo another boom of little leſs value at Fort Conſtitution. The loſs of the Britiſh army was but ſmall in number, though ſome officers of great merit were killed in the different attacks.

Another attack was made by Sir James Wallace with ſome frigates, and a body of land forces under General Vaughan. The place which now ſuffered was named Eſopus; the fortifications were deſtroyed, and the town itſelf was reduced to aſhes, as that called Continental Village had been before.

295 Great dejection on account of Burgoyne's capture.

But theſe ſucceſſes, of whatever importance they might be, were now diſregarded by both parties. They ſerved only to irritate the Americans, flushed with their ſucceſs; and they were utterly inſufficient to raiſe the ſpirits of the Britiſh, who were now thrown into the utmoſt diſmay.

296 Treaty between France and America.

On the 16th of March 1778, Lord North intimated to the houſe of commons, that a paper had been laid before the king by the French ambaſſador, intimating the concluſion of an alliance between the court of France and the United States of America. The preliminaries of this treaty had been concluded in the end of the year 1777, and a copy of them ſent to congreſs, in order to counteract any propoſals that might be made in the mean time by the Britiſh miniſtry. On the 7th of February 1778, the articles were formally ſigned, to the great ſatisfaction of the French nation.

They were in ſubſtance as follows:

1. If Great Britain ſhould, in conſequence of this treaty, proceed to hoſtilities againſt France, the two nations ſhould mutually aſſiſt one another.

2. The main end of the treaty was in an effectual manner to maintain the independency of America.

3. Should thoſe places of North America ſtill ſubject to Britain be reduced by the colonies, they ſhould be confederated with them, or ſubjected to their juriſdiction.

4. Should any of the Weſt India iſlands be reduced by France, they ſhould be deemed its property.

5. No formal treaty with Great Britain ſhould be concluded either by France or America without the conſent of each other; and it was mutually engaged that they ſhould not lay down their arms till the independence of the States had been formally acknowledged.

6. The contracting parties mutually agreed to invite theſe powers that had received injuries from Great Britain to join the common cauſe.

7. The United States guaranteed to France all the poſſeſſions in the Weſt Indies which ſhe ſhould conquer; and France in her turn guaranteed the abſolute independency of the States, and their ſupreme authority over every country they poſſeſſed, or might acquire during the war.

297 Britain commenced hoſtilities before the treaty.

The conſideration of ſuch a treaty as this could not but be looked upon as a declaration of war. On its being announced to the houſe, every one agreed in an addreſs to his majeſty, promiſing to ſtand by him to the utmoſt in the preſent emergency; but it was warmly contended by the members in oppoſition, that the preſent miniſtry ought to be removed on account of their numberleſs blunders and miſcarriages in every inſtance. Many were of opinion, that the only way to extricate the nation from its trouble was to acknowledge the independency of America at once; and thus we might ſtill do with a good grace what muſt inevitably be done at laſt, after expending much more blood and treaſure than had yet been laviſhed in this unhappy conteſt. The miniſterial party, however, entertained different ideas. Inſtigated by zeal for the national honour, it was determined at once to reſent the arrogance of France, and proſecute hoſtilities againſt America with more vigour than ever, ſhould the terms now offered them be rejected.

298 Amer send agents to different courts.

The Americans, in the mean time, aſſiduouſly employed their agents at the courts of Spain, Vienna, Pruſſia, and Tuſcany, in order, if poſſible, to conclude alliances with them, or at leaſt to procure an acknowledgment of their independency. As it had been reported that Britain intended to apply for aſſiſtance to Ruſſia, the American commiſſioners were enjoined to uſe their utmoſt influence with the German princes to prevent ſuch auxiliaries from marching through their territories, and to endeavour to procure the recall of the German troops already ſent to America. To France they offered a ceſſion of ſuch Weſt India iſlands as ſhould be taken by the united ſtrength of France and America; and ſhould Britain by their joint endeavours be diſpoſſeſſed of Newfoundland, Cape Breton, and Nova Scotia, theſe territories ſhould be divided betwixt the two nations, and Great Britain be totally excluded from the fiſhery. The propoſals to the Spaniſh court were, that in caſe they ſhould think proper to eſpouſe their quarrel, the American ſtates ſhould aſſiſt in reducing Penſacola under the dominion of Spain, provided their ſubjects were allowed the free navigation of the river Miſſiſſippi, and the uſe of the harbour of Penſacola; and they further offered, that if agreeable to Spain, they would declare war againſt Portugal, ſhould that power expel the American ſhips from its ports.

299 General Burgoyne's troops detained in America.

In the mean time, the troops under General Burgoyne were preparing to embark for Britain according to the convention at Saratoga; but to their utter ſurpriſe, congreſs poſitively refuſed to allow them to embark, under pretence that ſome ſiniſter deſigns were harboured on the part of Britain, and that they only wanted an opportunity to join the other troops at Philadelphia or New York.

300 Predatory war carried on by the Britiſh troops.

The ſeaſon for action was now approaching; and congreſs was indefatigable in its preparations for a new campaign, which it was confidently ſaid would be the laſt. Among other methods taken for this purpoſe, it was recommended to all the young gentlemen of the colonies to form themſelves into bodies of cavalry to ſerve at their own expence during the war. General Waſhington at the ſame time, in order to remove all encumbrances from his army, lightened the baggage as much as poſſible, by ſubſtituting ſacks and portmanteaus in place of cheſts and boxes, and uſing packhorſes inſtead of waggons. On the other hand, the Britiſh army, expecting to be ſpeedily reinforced by 20,000 men, thought of nothing but concluding the war according to their wiſhes before the end of the campaign. It was with the utmoſt concern as well as indignation, therefore, that they received the news of Lord North's conciliatory bill. It was univerſally looked upon as a national

301 Conciliatory bill received with indignation by the army.

diſgrace;

America. disgrace: and some even tore the cockades from their hats, and trampled them under their feet as a token of their indignation. By the colonists it was received with indifference. The British commissioners endeavoured to make it as public as possible; and the congress, as formerly, ordered it to be printed in all the newspapers. On this occasion Governor Tryon enclosed several copies of the bill to General Washington in a letter, entreating that he would allow them to be circulated; to which that general returned for answer a copy of a newspaper in which the bill was printed, with the resolutions of congress upon it. These were, That whoever presumed to make a separate agreement with Britain should be deemed a public enemy; that the United States could not with any propriety keep correspondence with the commissioners until their independence was acknowledged, and the British fleets and armies removed from America. At the same time, the colonies were warned not to suffer themselves to be deceived into security by any offers that might be made; but to use their utmost endeavours to send their quotas with all diligence into the field. The individuals with whom the commissioners conversed on the subject of the conciliatory bill, generally returned for answer, that the day of reconciliation was past; and that the haughtiness of Britain had extinguished all filial regard in the breasts of the Americans.

302 Despised by the colonists.

About this time also Mr Silas Deane arrived from France with two copies of the treaty of commerce and alliance to be signed by congress. Advices of the most agreeable nature were also received from various parts, representing in the most favourable light the disposition of the European powers; all of whom, it was said, wished to see the independence of America settled upon the most firm and permanent basis. Considering the situation of matters with the colonists at this time, therefore, it is no wonder that the commissioners found themselves unable to accomplish the business on which they came. Their proposals were utterly rejected, themselves treated as spies, and all intercourse with them interdicted.

303 Bad success of the commissioners.

But before any final answer could be obtained from congress, Sir Henry Clinton had taken the resolution of evacuating Philadelphia. Accordingly, on the 10th of June, after having made all necessary preparations, the army marched out of the city, and crossed the Delaware before noon with all its baggage and other encumbrances. General Washington, apprised of this design, had despatched expresses into the Jerseys with orders to collect all the force that could be assembled in order to obstruct the march of the enemy. After various movements on both sides, Sir Henry Clinton, with the royal army, arrived on the 27th of June at a place called Freehold; where, judging that the enemy would attack him, he encamped in a very strong situation. Here General Washington determined to make an attack as soon as the army had again begun its march. The night was spent in making the necessary preparations, and General Lee with his division was ordered to be ready by daybreak. But Sir Henry Clinton, justly apprehending that the chief object of the enemy was the baggage, committed it to the care of General Knyphausen, whom he ordered to set out early in the morning, while he followed with the rest of the army. The attack was accordingly made; but the British general had taken such care to arrange his troops properly, and so effectually supported his forces when engaged with the Americans, that the latter not only made no impression, but were with difficulty preserved from a total defeat by the advance of General Washington with the whole army. The British troops effected their retreat with the loss of 300 men, of whom many died through mere fatigue, without any wound. In this action General Lee was charged by General Washington with disobedience and misconduct in retreating before the British army. He was tried by a court martial, and sentenced to a temporary suspension from his command. After they had arrived at Sandy Hook, a bridge of boats was by Lord Howe's directions thrown from thence over the channel which separated the island from the main land, and the troops were conveyed aboard the fleet; after which they sailed to New York. After sending some light detachments to watch the enemy's motions, General Washington marched towards the North River, where a great force had been collected to join him, and where it was now expected that some very capital operations would take place.

304 Philadelphia evacuated.

In the mean time, France had set about her preparations for the assistance of the Americans. On the 14th of April Count d'Estaing had sailed from Toulon with a strong squadron of ships of the line and frigates, and arrived on the coast of Virginia in the beginning of July, while the British fleet was employed in conveying the forces from Sandy Hook to New York. It consisted of one ship of 90 guns, one of 80, six of 74, and four of 64, besides several large frigates; and, exclusive of its complement of sailors, had 6000 marines and soldiers on board. To oppose this the British had only six ships of 64 guns, three of 50, and two of 40, with some frigates and sloops. Notwithstanding this inferiority, however, the British admiral posted himself so advantageously, and showed such superior skill, that D'Estaing did not think proper to attack him. He therefore remained at anchor four miles off Sandy Hook till the 22d of July, without effecting any thing more than the capture of some vessels, which, through ignorance of his arrival, fell into his hands.

305 French fleet arrives at New York.

The next attempt of the French admiral was, in conjunction with the Americans, on Rhode Island. It was proposed that D'Estaing, with the 6000 troops he had with him, should make a descent on the southern part of the island, while a body of the Americans should take possession of the north; at the same time the French squadron was to enter the harbour of Newport, and take and destroy all the British shipping. On the 8th of August the French admiral entered the harbour as was proposed, but found himself unable to do any material damage. Lord Howe, however, instantly set sail for Rhode Island; and D'Estaing, confiding in his superiority, immediately came out of the harbour to attack him. A violent storm parted the two fleets, and did so much damage that they were rendered totally unfit for action. The French, however, suffered most; and several of the ships being afterwards attacked singly by the British, very narrowly escaped being taken. On the 20th of August he

306 Attempts Rhode Island without success.

America. he returned to Newport in a very ſhattered condition; and, not thinking himſelf ſafe there, ſailed two days after for Boſton. General Sullivan had landed in the mean time on the northern part of Rhode Iſland with 10,000 men. On the 17th of Auguſt they began their operations by erecting batteries, and making their approaches to the Britiſh lines. But General Pigot, who commanded in Newport, had taken ſuch effectual care to ſecure himſelf on the land ſide, that without the aſſiſtance of a marine force it was altogether impoſſible to attack him with any probability of ſucceſs. The conduct of D'Eſtaing, therefore, who had abandoned them when maſter of the harbour, gave the greateſt diſguſt to the people of New England, and Sullivan began to think of a retreat. On perceiving his intentions, the garriſon ſallied out upon him with ſo much vigour, that it was not without difficulty that he effected his retreat. He had not been long gone when Sir Henry Clinton arrived with a body of 4000 men; which, had it arrived ſooner, would have enabled the Britiſh commander to have gained a deciſive advantage over him, as well as to have deſtroyed the town of Providence, which, by its vicinity to Rhode Iſland, and the enterpriſes which were continually projected and carried on in that place, kept the inhabitants of Rhode Iſland in continual alarms.

307 The coaſts of America invaded by the Britiſh fleet.

The firſt Britiſh expedition was to Buzzard's Bay, on the coaſt of New England and neighbourhood of Rhode Iſland. Here they deſtroyed a great number of privateers and merchantmen, magazines, with ſtorehouſes, &c; whence proceeding to a fertile and populous iſland called Martha's Vineyard, they carried off 10,000 ſheep and 300 black cattle. Another expedition took place up the North River, under Lord Cornwallis and General Knyphauſen; the principal event of which was the deſtruction of a regiment of American cavalry, known by the name of Waſhington's Light Horſe. A third expedition was directed to Little Egg Harbour in New Jerſey, a place noted for privateers, the deſtruction of which was its principal intention. It was conducted by Captains Ferguſon and Collins, and ended in the deſtruction of the enemy's veſſels, as well as of the place itſelf. At the ſame time part of another body of American troops, called Pulaſki's Legion, was ſurpriſed, and a great number of them put to the ſword.

308 Expedition againſt Georgia.

The Americans had in the beginning of the year projected the conqueſt of Weſt Florida; and one Captain Willing, with a party of reſolute men, had made a ſucceſsful incurſion into the country. This awakened the attention of the Britiſh to the ſouthern colonies, and an expedition againſt them was reſolved on. Georgia was the place of deſtination; and the more effectually to enſure ſucceſs, Colonel Campbell, with a ſufficient force, under convoy of ſome ſhips of war, commanded by Commodore Hyde Parker, embarked at New York, while General Prevoſt, who commanded in Eaſt Florida, was directed to ſet out with all the force he could ſpare. The armament from New York arrived off the coaſt of Georgia in the month of December; and though the enemy were very ſtrongly poſted in an advantageous ſituation on the ſhore, the Britiſh troops made good their landing, and advanced towards Savannah the capital of the province. That very day they defeated the forces of the provincials, which oppoſed them; and took poſſeſſion of the town with ſuch celerity, that the Americans had not time to execute a reſolution they had taken of ſetting it on fire. In ten days the whole province of Georgia was reduced, Sunbury alone excepted; and this was alſo brought under ſubjection by General Prevoſt in his march northward. Every proper method was taken to ſecure the tranquillity of the country; and rewards were offered for apprehending committee and aſſembly men, or ſuch as they judged moſt inimical to the Britiſh intereſts. On the arrival of General Prevoſt, the command of the troops naturally devolved on him as the ſenior officer; and the conqueſt of Carolina was next projected. America.

309 Take poſſeſſion of Georgia.

In this attempt there was no ſmall probability of ſucceſs. The country contained a great number of friends to government, who now eagerly embraced the opportunity of declaring themſelves; many of the inhabitants of Georgia had joined the royal ſtandard; and there was not in the province any conſiderable body of provincial forces capable of oppoſing the efforts of regular and well-diſciplined troops. On the firſt news of General Prevoſt's approach, the loyaliſts aſſembled in a body, imagining themſelves able to ſtand their ground until their allies ſhould arrive; but in this they were diſappointed. The Americans attacked and defeated them with the loſs of half their number. The remainder retreated into Georgia; and after undergoing many difficulties, at laſt effected a junction with the Britiſh forces.

310 Carolina invaded.

In the mean time, General Lincoln, with a conſiderable body of American troops, had encamped within 20 miles of the town of Savannah; and another ſtrong party had poſted themſelves at a place called *Briar's Creek*, farther up the river of the ſame name. Thus the extent of the Britiſh government was likely to be circumſcribed within very narrow bounds. General Prevoſt therefore determined to diſlodge the party at Briar's Creek: and the latter, truſting to their ſtrong ſituation, and being remiſs in their guard, ſuffered themſelves to be ſurpriſed on the 30th of March 1779; when they were utterly routed with the loſs of 400 killed and taken, beſides a great number drowned in the river or the ſwamps. The whole artillery, ſtores, baggage, and almoſt all the arms, of this unfortunate party were taken, ſo that they could no more make any ſtand; and thus the province of Georgia was once more freed from the enemy, and a communication opened with thoſe places in Carolina where the royaliſts chiefly reſided.

311 Americans defeated.

The victory at Briar's Creek proved of conſiderable ſervice to the Britiſh cauſe. Great numbers of the loyaliſts joined his army, and conſiderably increaſed its force. Hence he was enabled to ſtretch his poſts further up the river, and to guard all the principal paſſes: ſo that General Lincoln was reduced to a ſtate of inaction; and at laſt moved off towards Auguſta, in order to protect the provincial aſſembly, which was obliged to ſit in that place, the capital being now in the hands of the Britiſh.

Lincoln had no ſooner quitted his poſt, than it was judged a proper time by the Britiſh general to put in execution the grand ſcheme which had been meditated againſt Carolina. Many difficulties indeed lay in his way. The river Savannah was ſwelled by the exceſſive

America. five rains of the ſeaſon, that it ſeemed impaſſable; the oppoſite ſhore, for a great way, was ſo full of ſwamps and marſhes, that no army could march over it without the greateſt difficulty; and, to render the paſſage ſtill more difficult, General Moultrie was left with a conſiderable body of troops in order to oppoſe the enemy's attempts. But in ſpite of every oppoſition, the conſtancy and perſeverance of the Britiſh forces at laſt prevailed. General Moultrie was defeated, and obliged to retire towards Charleſtown; and the victorious army, after having waded through the marſhes for ſome time, at laſt arrived in an open country, through which they purſued their march with great rapidity towards the capital; while General Lincoln remained in a ſtate of ſecurity at Auguſta, vainly imagining that the obſtacles he had left in the way could not be ſurmounted.

312 The Britiſh troops advance to Charleſtown.

313 General Lincoln advances to its relief.

Certain intelligence of the danger to which Charleſtown was expoſed at laſt aroufed the American general from his lethargy. A choſen body of infantry, mounted on horſeback for the greater expedition, was deſpatched before him; while Lincoln himſelf followed with all the forces he could collect. General Moultrie too, with the troops he had brought from Savannah, and ſome others he had collected ſince his retreat from thence, had taken poſſeſſion of all the avenues leading to Charleſtown, and prepared for a vigorous defence. But all oppoſition proved ineffectual. The Americans were defeated in every encounter; and, retreating continually, allowed the Britiſh army to come within cannon-ſhot of Charleſtown on the 12th of May.

The town was now ſummoned to ſurrender, and the inhabitants would gladly have agreed to obſerve a neutrality during the reſt of the war, and would have engaged alſo for the reſt of the province. But theſe terms not being accepted, they made preparations for a vigorous defence. It was not, however, in the power of the Britiſh commander at this time to make an attack with any proſpect of ſucceſs. His artillery was not of ſufficient weight; there were no ſhips to ſupport his attack by land; and General Lincoln advancing rapidly with a ſuperior army, threatened to encloſe him between his own force and the town; ſo that ſhould he fail in his firſt attempt, certain deſtruction would be the conſequence. For theſe reaſons he withdrew his forces from before the town, and took poſſeſſion of two iſlands called *St James's* and *St John's*, lying to the ſouthward; where having waited ſome time, his force was augmented by the arrival of two frigates. With theſe he determined to make himſelf maſter of Port Royal, another iſland poſſeſſed of an excellent harbour and many other natural advantages; from its ſituation alſo commanding all the ſea coaſt from Charleſtown to Savannah river. The American general, however, did not allow this to be accompliſhed without oppoſition. Perceiving that his opponent had occupied an advantageous poſt on St John's iſland preparatory to his enterpriſe againſt Port Royal, he attempted, on the 20th of June, to diſlodge him from it; but after an obſtinate attack, the provincials were, as uſual, obliged to retire with conſiderable loſs. On this occaſion the ſucceſs of the Britiſh arms was in a great meaſure owing to an armed float; which galled the right flank of the enemy ſo effectually, that they could direct their efforts only againſt the ſtrongeſt part of the lines, which proved impregnable to their attacks. This diſappointment was inſtantly followed by the loſs of Port Royal, which General Prevoſt took poſſeſſion of, and put his troops into proper ſtations, waiting for the arrival of ſuch reinforcements as were neceſſary for the intended attack on Charleſtown.

314 The attempt on it abandoned.

315 The Americans defeated.

In the mean time Count d'Eſtaing, who, as we have already obſerved, had put into Boſton harbour to refit, had uſed his utmoſt efforts to ingratiate himſelf with the inhabitants of that city. Zealous alſo in the cauſe of his maſter, he had publiſhed a proclamation, to be diſperſed through Canada, inviting the people to return to their original friendſhip with France, and declaring that all who renounced their allegiance to Great Britain ſhould certainly find a protector in the king of France. All his endeavours, however, proved inſufficient at this time to produce any revolution, or even to form a party of any conſequence among the Canadians.

316 D'Eſtaing

As ſoon as the French admiral had refitted his fleet, he took the opportunity, while that of Admiral Byron had been ſhattered by a ſtorm, of ſailing to the Weſt Indies. During his operations there, the Americans having repreſented his conduct as totally unſerviceable to them, he received orders from Europe to aſſiſt the colonies with all poſſible ſpeed.

317 D'Eſtaing's expedition againſt Georgia.

In compliance with theſe orders, he directed his courſe towards Georgia, with a deſign to recover that province out of the hands of the enemy, and to put it, as well as South Carolina, in ſuch a poſture of defence as would effectually ſecure them from any future attack. This ſeemed to be an eaſy matter, from the little force by which he knew he ſhould be oppoſed; and the next object in contemplation was no leſs than the deſtruction of the Britiſh fleet and army at New York, and their total expulſion from the continent of America. Full of theſe hopes, the French commander arrived off the coaſt of Georgia with a fleet of 22 ſail of the line and 12 large frigates. His arrival was ſo little expected, that ſeveral veſſels laden with proviſions and military ſtores fell into his hands; the Experiment alſo, a veſſel of 50 guns, commanded by Sir James Wallace, was taken after a ſtout reſiſtance. On the continent, the Britiſh troops were divided. General Prevoſt, with an inconſiderable part, remained at Savannah; but the main force was under Colonel Maitland at Port Royal. On the firſt appearance of the French fleet, an expreſs was deſpatched to Colonel Maitland: but it was intercepted by the enemy; ſo that before he could ſet out in order to join the commander in chief, the Americans had ſecured moſt of the paſſes by land, while the French fleet effectually blocked up the paſſage by ſea. But, by taking advantage of creeks and rivulets, and marching over land, he arrived juſt in time to relieve Savannah.

318 D'Eſtaing, after making a gaſconade of what had happened at St Vincents and Grenada, had allowed General Prevoſt 24 hours to deliberate whether he ſhould capitulate or not. This time the general employed in making the beſt preparations he could for a defence; and during this time it was that Colonel Maitland arrived. D'Eſtaing's ſummons was now rejected; and as on this occaſion the ſuperiority of the enemy was by no means ſo much out of proportion as it had been at Grenada, there was every probability of

America. succeſs on the part of the Britiſh. The garriſon now conſiſted of 3000 men, all of approved valour and experience, while the united force of the French and Americans did not amount to 10,000. The event was anſwerable to the expectations of the Britiſh general. Having the advantage of a ſtrong fortification and excellent engineers, the fire of the allies made ſo little impreſſion, that D'Eſtaing reſolved to bombard the town, and a battery of nine mortars was erected for the purpoſe. This produced a requeſt from General Prevoſt, that the women and children might be allowed to retire to a place of ſafety. But the allied commanders had the inhumanity to refuſe compliance; and they reſolved to give a general aſſault. This was accordingly attempted on the 9th of October: but the aſſailants were everywhere repulſed with ſuch ſlaughter, that 1200 were killed and wounded: among the former was Count Pulaſki, and among the latter was D'Eſtaing himſelf.

320 Cruelty of the French and American generals.

321 They are utterly defeated.

This diſaſter entirely overthrew the ſanguine hopes of the Americans and French; mutual reproaches and animoſities took place in the moſt violent degree; and after waiting eight days longer, both parties prepared for a retreat; the French to their ſhipping, and the Americans into Carolina.

322 Succeſsful expeditions againſt the northern American provinces.

While the allies were thus unſucceſsfully employed in the ſouthern colonies, their antagoniſts were no leſs aſſiduous in diſtreſſing them in the northern parts. Sir George Collier was ſent with a fleet, carrying on board General Matthews, with a body of land forces, into the province of Virginia. Their firſt attempt was on the town of Portſmouth; where, though the enemy had deſtroyed ſome ſhips of great value, the Britiſh troops arrived in time to ſave a great number of others. On this occaſion about 120 veſſels of different ſizes were burnt, and 20 carried off; and an immenſe quantity of proviſions deſigned for the uſe of General Waſhington's army was either deſtroyed or carried off, together with a great variety of naval and military ſtores. The fleet and army returned with little or no loſs to New York.

The ſucceſs with which this expedition was attended, ſoon gave encouragement to attempt another. The Americans had for ſome time been employed in the erection of two ſtrong forts on the river; the one at Verplanks Neck on the eaſt, and the other at Stoney Point on the weſt ſide. Theſe when completed would have been of the utmoſt ſervice to the Americans, as commanding the principal paſs, called the *King's Ferry*, between the northern and ſouthern colonies. At preſent, however, they were not in a condition to make any effectual defence; and it was therefore determined to attack them before the works ſhould be completed. The force employed on this occaſion was divided into two bodies; one of which directed its courſe againſt Verplanks, and the other againſt Stoney Point. The former was commanded by General Vaughan, the latter by General Pattiſon, while the ſhipping was under the direction of Sir George Collier. General Vaughan met with no reſiſtance, the enemy abandoning their works, and ſetting fire to every thing combuſtible that they could not carry off. At Stoney Point, however, a vigorous defence was made, though the garriſon was at laſt obliged to capitulate upon honourable conditions. To ſecure the poſſeſſion of this laſt, which was the more important of the two, General Clinton removed from his former ſituation, and encamped in ſuch a manner that Waſhington could not give any aſſiſtance. The Americans, however, revenged themſelves by diſtreſſing, with their numerous privateers, the trade to New York. America.

This occaſioned a third expedition to Connecticut, where theſe privateers were chiefly built and harboured. The command was given to Governor Tryon, and to General Garth, an officer of known valour and experience. Under convoy of a conſiderable number of armed veſſels they landed at Newhaven, where they demoliſhed the batteries that had been erected to oppoſe them, and deſtroyed the ſhipping and naval ſtores; but they ſpared the town itſelf, as the inhabitants had abſtained from firing out of their houſes upon the troops. From Newhaven they marched to Fairfield, where they proceeded as before, reducing the town alſo to aſhes. Norwalk was next attacked, which in like manner was reduced to aſhes; as was alſo Greenfield, a ſmall ſeaport in the neighbourhood.

Theſe ſucceſſes proved very alarming as well as detrimental to the Americans; ſo that General Waſhington determined at all events to drive the enemy from Stoney Point. For this purpoſe he ſent General Wayne with a detachment of choſen men, directing them to attempt the recovery of it by ſurpriſe. On this occaſion the Americans ſhowed a ſpirit and reſolution exceeding any thing they had performed during the courſe of the war. Though after the capture of it by the Britiſh the fortifications of this place had been completed, and were very ſtrong, they attacked the enemy with bayonets, after paſſing through a heavy fire of muſketry and grape ſhot; and in ſpite of all oppoſition, obliged the ſurviving part of the garriſon, amounting to 500 men, to ſurrender themſelves priſoners of war.

Though the Americans did not at preſent attempt to retain poſſeſſion of Stoney Point, the ſucceſs they had met with in the enterpriſe emboldened them to make a ſimilar attempt on Paulus Hook, a fortified poſt on the Jerſey ſide oppoſite to New York; but in this they were not attended with equal ſucceſs, being obliged to retire with precipitation after they had made themſelves maſters of one or two poſts.

323 Unſucceſsful expedition of the Americans againſt Penobſcot.

Another expedition of greater importance was now projected on the part of the Americans. This was againſt a poſt on the river Penobſcot, on the borders of Nova Scotia, of which the Britiſh had lately taken poſſeſſion, and where they had begun to erect a fort which threatened to be a very great inconvenience to the coloniſts. The armament deſtined againſt it was ſo ſoon got in readineſs, that Colonel Maclean, the commanding officer at Penobſcot, found himſelf obliged to drop the execution of part of his ſcheme; and inſtead of a regular fort, to content himſelf with putting the works already conſtructed in as good a poſture of defence as poſſible. The Americans could not effect a landing without a great deal of difficulty, and bringing the guns of their largeſt veſſels to bear upon the ſhore. As ſoon as this was done, however, they erected ſeveral batteries, and kept up a briſk fire for the ſpace of a fortnight; after which they propoſed to give a general aſſault: but before this could be effected, they perceived Sir George Collier with a Britiſh fleet ſailing up the river to attack

America. tack them. On this they inſtantly embarked their artillery and military ſtores, ſailing up the river as far as poſſible in order to avoid him. They were ſo cloſely purſued, however, that not a ſingle veſſel could eſcape; ſo that the whole fleet, conſiſting of 19 armed veſſels and 24 tranſports, was deſtroyed; moſt of them indeed being blown up by themſelves. The ſoldiers and ſailors were obliged to wander through immenſe deſerts, where they ſuffered much for want of proviſions; and to add to their calamities, a quarrel broke out between the ſoldiers and ſeamen concerning the cauſe of their diſaſter, which ended in a violent fray, wherein a great number were killed.

Thus the arms of America and France being almoſt everywhere unſucceſsful, the independency of the former ſeemed yet to be in danger notwithſtanding the aſſiſtance of ſo powerful an ally, when further encouragement was given by the acceſſion of Spain to the confederacy againſt Britain in the month of June 1779. The firſt effect of this appeared in an invaſion of Weſt Florida by the Spaniards in September 1779. As the country was in no ſtate of defence, the enemy eaſily made themſelves maſters of the whole almoſt without oppoſition. Their next enterpriſe was againſt the Bay of Honduras, where the Britiſh logwood cutters were ſettled. Theſe finding themſelves too weak to reſiſt, applied to the governor of Jamaica for relief; who ſent them a ſupply of men, ammunition, and military ſtores, under Captain Dalrymple. Before the arrival of this detachment, the principal ſettlement in thoſe parts, called *St George's Key*, had been taken by the Spaniards and retaken by the Britiſh. In his way Captain Dalrymple fell in with a ſquadron from Admiral Parker in ſearch of ſome regiſter ſhips richly laden; but which retreating into the harbour of Omoa, were too ſtrongly protected by the fort to be attacked with ſafety. A project was then formed, in conjunction with the people of Honduras, to reduce this fort. The deſign was to ſurpriſe it; but the Spaniards having diſcovered them, they were obliged to fight. Victory quickly declared for the Britiſh; but the fortifications were ſo ſtrong, that the artillery they had brought along with them were found too light to make any impreſſion. It was then determined to try the ſucceſs of an eſcalade; and this was executed with ſo much ſpirit, that the Spaniards ſtood aſtoniſhed without making any reſiſtance, and, in ſpite of all the efforts of their officers, threw down their arms and ſurrendered. The ſpoil was immenſe, being valued at three millions of dollars. The Spaniards chiefly lamented the loſs of 250 quintals of quickſilver; a commodity indiſpenſably neceſſary in the working of their gold and ſilver mines, ſo that they offered to ranſom it at any price: but this was refuſed, as well as the ranſom of the fort, though the governor offered 300,000 dollars for it. A ſmall garriſon was left for the defence of the place: but it was quickly attacked by a ſuperior force, and obliged to evacuate it, though not without deſtroying every thing that could be of uſe to the enemy; ſpiking the guns, and even locking the gates of the fort and carrying off the keys. All this was done in ſight of the beſiegers; after which the garriſon embarked without the loſs of a man.

324 Spain joins the confederacy againſt Britain.

325 Fort Omoa taken by the Britiſh;

326 but they are obliged to evacuate it.

As no operation of any conſequence took place this year in the province of New York, the congreſs made uſe of the opportunity to deſpatch General Sullivan with a conſiderable force, in order to take vengeance on the Indians for their ravages and depredations: and the object of the expedition was, not merely the reduction of them, but if poſſible their utter extirpation. Of this the Indians were apprized; and collecting all their ſtrength, reſolved to come to a deciſive engagement. Accordingly they took a ſtrong poſt in the moſt woody and mountainous part of the country; erecting a breaſtwork in the front, of large logs of wood, extending half a mile in length, while their right flank was covered by a river, and the left by a hill of difficult acceſs. This advantageous poſition they had taken by the advice of the refugees who were among them, and of whom 200 or 300 were preſent in the battle.

Thus poſted, the Indians waited the approach of the American army; but the latter having brought ſome artillery along with them, played it againſt the breaſtwork of the enemy with ſuch ſucceſs, that in two hours it was almoſt deſtroyed; and at the ſame time a party having reached the top of the hill, they became apprehenſive of being ſurrounded, on which they inſtantly fled with precipitation, leaving a great number of killed and wounded behind them. The Americans after this battle met with no further reſiſtance of any conſequence. They were ſuffered to proceed without interruption, and to execute in the moſt ample manner the vengeance they had projected. On entering the country of the Indians, it appeared that they had been acquainted with agriculture and the arts of peace far beyond what had been ſuppoſed. From General Sullivan's account it was learned, that the Indian houſes, were large, convenient, and even elegant; their grounds were excellently cultivated, and their gardens abounded in fruit trees and vegetables of all kinds fit for food. The whole of this fine country was now by the American general converted into a deſert. Forty towns and ſettlements, beſides ſcattered habitations, were demoliſhed; the fields of corn, the orchards, the plantations, were utterly laid waſte; all the fruit trees were cut down; and ſo great had been the induſtry of the Indians, that in one orchard 1500 of theſe were deſtroyed. The quantity of corn waſted on this occaſion was ſuppoſed to amount to 160,000 buſhels. In ſhort ſuch was the deſolation, that on the American army's leaving the country, not a houſe, not a field of corn, not a fruit tree, was left upon the ground, nor was an Indian to be ſeen throughout the whole tract.

We muſt now take a view of the tranſactions in the ſouthern colonies; to which the war was, in the year 1780, ſo effectually tranſferred, that the operations there became at laſt deciſive. The ſucceſs of General Prevoſt in advancing to the very capital of South Carolina has been already related, together with the obſtacles which prevented him from becoming maſter of it at that time. Towards the end of the year 1779, however, Sir Henry Clinton ſet ſail from New York with a conſiderable body of troops, intended for the attack of Charleſtown, South Carolina, in a fleet of ſhips of war and tranſports under the command of Vice Admiral Arbuthnot. They had a very tedious voyage; the weather was uncommonly bad; ſeveral of the tranſports were loſt, as was alſo the greater part of the

327 Expedition of Sir Henry Clinton againſt Charleſtown.

American. horſes which they carried with them, intended for cavalry or other public uſes; and an ordnance ſhip likewiſe foundered at ſea. Having arrived at Savannah, where they endeavoured to repair the damages ſuſtained on their voyage, they proceeded from thence on the 10th of February 1780 to North Ediſto, the place of debarkation which had been previouſly appointed. They had a favourable and ſpeedy paſſage thither: and though it required time to have the bar explored and the channel marked, the tranſports all entered the harbour the next day; and the army took poſſeſſion of John's iſland without oppoſition. Preparations were then made for paſſing the ſquadron over Charleſtown bar, where the high water ſpring tides were only 19 feet deep: but no opportunity offered of going into the harbour till the 20th of March, when it was effected without any accident, though the American galleys continually attempted to prevent the Engliſh boats from ſounding the channel. The Britiſh troops had previouſly removed from John's to James's iſland; and on the 29th of the ſame month they effected their landing at Charleſtown Neck. On the 1ſt of April they broke ground within 800 yards of the American works; and by the 8th the beſiegers guns were mounted in battery.

As ſoon as the army began to erect their batteries againſt the town, Admiral Arbuthnot embraced the firſt favourable opportunity of paſſing Sullivan's iſland, upon which there was a ſtrong fort of batteries, the chief defence of the harbour. He weighed on the 9th, with the Roebuck, Richmond, and Romulus, Blonde, Virginia, Raleigh, and Sandwich armed ſhip, the Renown bringing up the rear; and, paſſing through a ſevere fire, anchored in about two hours under James's iſland, with the loſs of 27 ſeamen killed and wounded. The Richmond's fore top maſt was ſhot away, and the ſhips in general ſuſtained damage in their maſts and rigging, though not materially in their hulls. But the Acetus tranſport, having on board ſome naval ſtores, grounded within gunſhot of Sullivan's iſland, and received ſo much damage that ſhe was obliged to be abandoned and burnt.

330 The town defended by Lincoln. On the 10th, Sir Henry Clinton and Admiral Arbuthnot ſummoned the town to ſurrender to his majeſty's arms: but Major-general Lincoln, who commanded in Charleſtown, returned them an anſwer, declaring it to be his intention to defend the place. The batteries were now opened againſt the town; and from their effect the fire of the American advanced works conſiderably abated. It appears that the number of troops under the command of Lincoln was by far too few for defending works of ſuch extent as thoſe of Charleſtown; and that many of theſe were men little accuſtomed to military ſervice, and very ill provided with clothes and other neceſſaries. Lincoln had been for ſome time expecting reinforcements and ſupplies from Virginia and other places; but they came in very ſlowly. Earl Cornwallis, and Lieutenant-colonel Tarleton under him, were alſo extremely active in intercepting ſuch reinforcements and ſupplies as were ſent to the American general. They totally defeated a conſiderable body of cavalry and militia which was proceeding to the relief of the town; and alſo made themſelves maſters of ſome poſts which gave them in a great degree the command of the country, by which means great ſupplies of proviſions fell into their hands. American.

Such was the ſtate of things, and Fort Sullivan had alſo been taken by the king's troops, when on the 18th General Clinton again ſummoned the town to ſurrender; an offer being made, as had been done before, that if they ſurrendered, the lives and property of the inhabitants ſhould be preſerved to them. Articles of capitulation were then propoſed by General Lincoln; but the terms were not agreed to by General Clinton. At length, however, the town being cloſely inveſted on all ſides, and the preparations to ſtorm it in every part being in great forwardneſs, and the ſhips ready to move to the aſſault, General Lincoln, who had been applied to for that purpoſe by the inhabitants, ſurrendered it on ſuch articles of capitulation as General Clinton had before agreed to. This was on the 12th of May, which was one month and two days after the town had been firſt ſummoned to ſurrender. 331 The place ſurrenders.

A large quantity of ordnance, arms, and ammunition, was found in Charleſtown; and, according to Sir Henry Clinton's account, the number of priſoners taken in Charleſtown amounted to 5618 men, excluſive of near a thouſand ſailors in arms; but according to General Lincoln's account, tranſmitted to the congreſs, the whole number of continental troops taken priſoners amounted to no more than 2487. The remainder, therefore, included in General Clinton's account, muſt have conſiſted of militia and inhabitants of the town. Several American frigates were alſo taken or deſtroyed in the harbour of Charleſtown.

The loſs of Charleſtown evidently excited a conſiderable alarm in America: and their popular writers, particularly the author of the celebrated performance entitled Common Senſe, in ſome other pieces made uſe of it as a powerful argument to lead them to more vigorous exertions againſt Great Britain, that they might the more effectually and certainly ſecure their independence.

332 Apprehenſions at New York. While Sir Henry Clinton was employed in his voyage to Charleſtown, and in the ſiege of that place, the garriſon at New York ſeem not to have been wholly free from apprehenſions for their own ſafety. An intenſe froſt, accompanied with great falls of ſnow, began about the middle of December 1779, and ſhut up the navigation of the port of New York from the ſea, within a few days after the departure of Admiral Arbuthnot and General Clinton. The ſeverity of the weather increaſed to ſo great a degree, that towards the middle of January all communications with New York by water were entirely cut off, and as many new ones opened by the ice. The inhabitants could ſcarcely be ſaid to be in an inſular ſtate. Horſes with heavy carriages could go over the ice into the Jerſeys from one iſland to another. The paſſage in the North River, even in the wideſt part from New York to Paulus Hook, which was 2000 yards, was about the 19th of January practicable for the heavieſt cannon: an event which had been unknown in the memory of man. Proviſions were ſoon after tranſported upon ſledges, and a detachment of cavalry marched upon the ice from New York to Staten Iſland, which was a diſtance of 11 miles.

The city of New York being thus circumſtanced,

America.

was conſidered as much expoſed to the attacks from the continental troops: and it was ſtrongly reported that General Waſhington was meditating a great ſtroke upon New York with his whole force, by different attacks. Some time before this, Major-general Pattiſon, commandant at New York, having received an addreſs from many of the inhabitants, offering to put themſelves in military array, he thought the preſent a favourable opportunity of proving the ſincerity of their profeſſions. Accordingly he iſſued a proclamation, calling upon all the male inhabitants from 16 to 60 to take up arms. The requiſition was ſo readily complied with, that in a few days 40 companies from the ſix wards of the city were enrolled, officered, and under arms, to the number of 2600, many ſubſtantial citizens ſerving in the ranks of each company. Other volunteer companies were formed; and the city was put into a very ſtrong poſture of defence.

333 Forwardneſs of the inhabitants to be enrolled for its defence.

No attack, however, was made upon New York, whatever deſign might originally have been meditated; but an attempt was made upon Staten iſland, where there were about 1800 men, under the command of Brigadier-general Sterling, who were well intrenched. General Waſhington, whoſe army was hutted at Moriſtown, ſent a detachment of 2700 men, with ſix pieces of cannon, two mortars, and ſome horſes, commanded by Lord Sterling, who arrived at Staten iſland early in the morning of the 15th January. The advanced poſts of the Britiſh troops retired upon the approach of the Americans, who formed the line, and made ſome movements in the courſe of the day; but they withdrew in the night, after having burnt one houſe, pillaged ſome others, and carried off with them about 200 head of cattle. Immediately on the arrival of the Americans on Staten iſland, Lieutenant-general Knyphauſen had embarked 600 men to attempt a paſſage, and to ſupport General Sterling: but the floating ice compelled them to return. It is, however, imagined, that the appearance of theſe tranſports, with the Britiſh troops on board, which the Americans could ſee towards the cloſe of the day, induced the latter to make ſo precipitate a retreat.

334 The provincials attack Staten Iſland;

335 but are induced to make a precipitate retreat.

After Charleſtown had ſurrendered to the king's troops, General Clinton iſſued two proclamations, and alſo circulated a hand bill amongſt the inhabitants of South Carolina, in order to induce them to return to their allegiance, and to be ready to join the king's troops. It was ſaid, that the helping hand of every man was wanted to re-eſtabliſh peace and good government: and that as the commander in chief wiſhed not to draw the king's friends into danger, while any doubt could remain of their ſucceſs; ſo now that this was certain, he truſted that one and all would heartily join, and by a general concurrence give effect to ſuch neceſſary meaſures for that purpoſe as from time to time might be pointed out. Thoſe who had families were to form a militia to remain at home, and occaſionally to aſſemble in their own diſtricts, when required, under officers of their own chooſing, for the maintenance of peace and good order. Thoſe who had no families, and who could conveniently be ſpared for a time, it was preſumed, would cheerfully aſſiſt his majeſty's troops in driving their oppreſſors, acting under the authority of congreſs, and all the miſeries of war, far from that colony. For this purpoſe it was ſaid to be neceſſary that the young men ſhould be ready to aſſemble when required, and to ſerve with the king's troops for any ſix months of the enſuing twelve that might be found requiſite, under proper regulations. They might chooſe officers to each company to command them; and were to be allowed, when on ſervice, pay, ammunition, and proviſions, in the ſame manner as the king's troops. When they joined the army, each man was to be furniſhed with a certificate, declaring that he was only engaged to ſerve as a militiaman for the time ſpecified; that he was not to be marched beyond North Carolina and Georgia; and that, when the time was out, he was freed from all claims whatever of military ſervice, excepting the common and uſual militia duty where he lived. He would then, it was ſaid, have paid his debt to his country, and be entitled to enjoy undiſturbed that peace, liberty, and property, at home, which he had contributed to ſecure. The proclamations and publications of General Clinton appear to have produced ſome effect in South Carolina; though they probably operated chiefly upon thoſe who were before not much inclined to the cauſe of American independence. Two hundred and ten of the inhabitants of Charleſtown ſigned an addreſs to General Clinton and Admiral Arbuthnot, ſoliciting to be readmitted to the character and condition of Britiſh ſubjects, the inhabitants of that city having been hitherto conſidered as priſoners on parole; declaring their diſapprobation of the doctrine of American independence; and expreſſing their regret, that after the repeal of thoſe ſtatutes which gave riſe to the troubles in America, the overtures made by his majeſty's commiſſioners had not been regarded by the congreſs. Sir Henry Clinton, in one of the proclamations iſſued at this time, declared, that if any perſons ſhould thenceforward appear in arms in order to prevent the eſtabliſhment of his majeſty's government in that country, or ſhould, under any pretence or authority whatſoever, attempt to compel any other perſon or perſons to do ſo, or ſhould hinder or intimidate the king's faithful and loyal ſubjects from joining his forces or otherwiſe performing thoſe duties their allegiance required, ſuch perſons ſhould be treated with the utmoſt ſeverity, and their eſtates be immediately ſeized in order to be confiſcated.

336 Proclamations by General Clinton.

Mean time the ravages of war did not prevent the Americans from paying ſome attention to the arts of peace. On the 5th of May an act paſſed by the council and houſe of repreſentatives of Maſſachuſets Bay for incorporating and eſtabliſhing a ſociety for the cultivation and promotion of the arts and ſciences.

Some doubts having ariſen in the congreſs, towards the cloſe of the preceding year, about the propriety of their aſſembling in the city of Philadelphia, it was now reſolved that they ſhould continue to meet there: and a committee of three members was appointed, to report a proper place where buildings might be provided for the reception of the congreſs, together with an eſtimate of the expence of providing ſuch buildings and the neceſſary offices for the ſeveral boards. It was alſo reſolved by the congreſs, that a monument ſhould be erected to the memory of their late general Richard Montgomery, who fell at Quebec, in teſtimony of his ſignal and important ſervices to the United

congreſs.

Stat-

America. States of America, with an inſcription expreſſive of his amiable character and heroic achievements; and that the continental treaſurers ſhould be directed to advance a ſum not exceeding 3001. to Dr Franklin to defray the expence; that gentleman being deſired to cauſe the monument to be executed at Paris, or in ſome other part of France. It was likewiſe reſolved by the congreſs that a court ſhould be eſtabliſhed for the trial of all appeals from the court of admiralty of the United States of America, in caſes of capture; to conſiſt of three judges, appointed and commiſſioned by congreſs, and who were to take an oath of office; and that the trials in this court ſhould be determined by the uſage of nations.

338 Difficulties ariſing from the depreciation of their paper currency.

The difficulties of the congreſs and of the people of America had been greatly increaſed by the depreciation of their paper currency. At the time when the colonies engaged in a war with Great Britain, they had no regular civil governments eſtabliſhed among them of ſufficient energy to enforce the collection of taxes, or to provide funds for the redemption of ſuch bills of credit as their neceſſities obliged them to iſſue. In conſequence of this ſtate of things, their bills increaſed in quantity far beyond the ſum neceſſary for the purpoſe of a circulating medium: and as they wanted at the ſame time ſpecific funds to reſt on for their redemption, they ſaw their paper currency daily ſink in value. The depreciation continued by a kind of gradual progreſſion, from the year 1777 to 1780; ſo that, at the latter period, the continental dollars were paſſed, by common conſent, in moſt parts of America, at the rate of at leaſt $\frac{1}{40}$ths below their nominal value. The impoſſibility of keeping up the credit of the currency to any fixed ſtandard, occaſioned great and almoſt inſurmountable embarraſſments in aſcertaining the value of property, or carrying on trade with any ſufficient certainty. Thoſe who ſold, and thoſe who bought, were left without a rule whereon to form a judgment of their profit or their loſs; and every ſpecies of commerce or exchange, whether foreign or domeſtic, was expoſed to numberleſs and increaſing difficulties. The conſequences of the depreciation of the paper currency were alſo felt with peculiar ſeverity by ſuch of the Americans as were engaged in their military ſervices, and greatly augmented their other hardſhips. The requiſitions made by the congreſs to the ſeveral colonies for ſupplies, were alſo far from being always regularly complied with: and their troops were not unfrequently in want of the moſt common neceſſaries; which naturally occaſioned complaints and diſcontent among them. Some of theſe difficulties, reſulting from their circumſtances and ſituation, perhaps no wiſdom could have prevented: but they ſeem to have ariſen in part from the congreſs not being ſufficiently acquainted with the principles of finance, and from a defect of ſyſtem in the departments of their government. The cauſe of the Americans appears alſo to have ſuffered ſomewhat by their depending too much on temporary inliſtments. But the congreſs endeavoured, towards the cloſe of the year 1780, to put their army upon a more permanent footing, and to give all the ſatisfaction to their officers and ſoldiers which their circumſtances would permit. They appointed a committee for arranging their finances, and made ſome new regulations reſpecting their war-office and treaſury-board, and other public departments. America.

339 Anniverſary of American independence celebrated at Philadelphia.

Notwithſtanding the diſadvantages under which they laboured, the Americans ſeemed to entertain no doubts but that they ſhould be able to maintain their independency. The 4th of July was celebrated this year at Philadelphia with ſome pomp, as the anniverſary of American independence. A commencement for conferring degrees in the arts was held the ſame day, in the hall of the univerſity there; at which the preſident and members of the congreſs attended, and other perſons in public offices. The chevalier de la Lucerne, miniſter plenipotentiary from the French king to the United States, was alſo preſent on the occaſion. A charge was publicly addreſſed by the provoſt of the univerſity to the ſtudents; in which he ſaid, that he could not but congratulate them "on that auſpicious day, which, amidſt the confuſions and deſolations of war, beheld learning beginning to revive; and animated them with the pleaſing proſpect of ſeeing the ſacred lamp of ſcience burning with a ſtill brighter flame, and ſcattering its invigorating rays over the unexplored deſerts of that extenſive continent; until the whole world ſhould be involved in the united blaze of knowledge, liberty, and religion. When he ſtretched his views forward (he ſaid), and ſurveyed the riſing glories of America, the enriching conſequences of their determined ſtruggle for liberty, the extenſive fields of intellectual improvement and uſeful invention, in ſcience and arts, in agriculture and commerce, in religion and government, through which the unfettered mind would range, with increaſing delight, in queſt of the undiſcovered treaſure which yet lay concealed in the animal, vegetable, and mineral kingdoms of that new world, or in the other fertile ſources of knowledge with which it abounded; his heart ſwelled with the pleaſing proſpect, that the ſons of that inſtitution would diſtinguiſh themſelves, in the different walks of life, by their literary contributions to the embelliſhment and increaſe of human happineſs."

340 A large body of French troops land at Rhode Iſland.

On the 10th of July, M. Ternay, with a fleet conſiſting of ſeven ſhips of the line, beſides frigates, and a large body of French troops, commanded by the count de Rochambeau, arrived at Rhode Iſland; and the following day 6000 men were landed there. A committee from the general aſſembly of Rhode Iſland was appointed to congratulate the French general upon his arrival: whereupon he returned an anſwer, in which he informed them, that the king his maſter had ſent him to the aſſiſtance of his good and faithful allies the United States of America. At preſent, he ſaid, he only brought over the vanguard of a much greater force deſtined for their aid; and the king had ordered him to aſſure them, that his whole power ſhould be exerted for their ſupport. He added, that the French troops were under the ſtricteſt diſcipline; and, acting under the orders of General Waſhington, would live with the Americans as their brethren.

A ſcheme was ſoon after formed, of making a combined attack with Engliſh ſhips and troops, under the command of Sir Henry Clinton and Admiral Arbuthnot, againſt the French fleet and troops at Rhode Iſland. Accordingly a conſiderable part of the troops at New York was embarked for that purpoſe. General

American. neral Washington having received information of this, passed the North River, by a very rapid movement, and with an army increased to 12,000 men, proceeded with celerity towards King's Bridge, in order to attack New York; but learning that the British general had changed his intention, and disembarked his troops on the 31st of the month, General Washington recrossed the river, and returned to his former station. Sir Henry Clinton and the admiral had agreed to relinquish their design of attacking the French and Americans at Rhode Island as impracticable for the present.

341 Unsuccessful expedition in the Jerseys.

An unsuccessful attempt was also made about this time in the Jerseys by General Knyphausen, with 7000 British troops under his command, to surprise the advanced posts of General Washington's army. They proceeded very rapidly towards Springfield, meeting little opposition till they came to the bridge there, which was very gallantly defended by 170 of the continental troops, for 15 minutes, against the British army: but they were at length obliged to give up so unequal a contest, with the loss of 37 men. After securing this pass, the British troops marched into the place, and set fire to most of the houses. They also committed some other depredations in the Jerseys; but gained no laurels there, being obliged to return about the beginning of July without effecting any thing material.

But in South Carolina the royal arms were attended with more success. Earl Cornwallis, who commanded the British troops there, obtained a very signal victory over General Gates on the 16th of August. The action began at break of day, in a situation very advantageous for the British troops, but very unfavourable to the Americans. The latter were much more numerous; but the ground on which both armies stood was narrowed by swamps on the right and left, so that the Americans could not properly avail themselves of their superior numbers. There seems to have been some want of generalship in Gates, in suffering himself to be surprised in so disadvantageous a position: but this circumstance was partly the effect of accident; for both armies set out with a design of attacking each other precisely at the same time, at ten the preceding evening, and met together before daylight at the place where the action happened. The attack was made by the British troops with great vigour, and in a few minutes the action was general along the whole line. It was at this time a dead calm, with a little haziness in the air, which preventing the smoke from rising, occasioned so thick a darkness, that it was difficult to see the effect of a very heavy and well-supported fire on both sides. The British troops either kept up a constant fire, or made use of bayonets, as opportunities offered; and, after an obstinate resistance during three quarters of an hour, threw the Americans into total confusion, and forced them to give way in all quarters. The continental troops appear to have behaved well; but the militia were soon broken, and left the former to oppose the whole force of the British troops. General Gates did all in his power to rally the militia, but without effect: the continentals retreated in some order; but the rout of the militia was so great, that the British cavalry are said to have continued the pursuit of them to the distance of 22 miles from the place where the action happened. The loss of the Americans was very considerable: about 1000 prisoners were taken, and more are said to have been killed and wounded, but the number is not very accurately ascertained. Seven pieces of brass cannon, a number of colours, and all the ammunition waggons of the Americans, were also taken. Of the British troops, the killed and wounded amounted to 213. Among the prisoners taken was Major-general Baron de Kalb, a Prussian officer in the American service, who was mortally wounded, having exhibited great gallantry in the course of the action, and received 11 wounds. The British troops by whom this great victory was achieved did not much exceed 2000, while the American army is said to have amounted to 6000; of which, however, the greatest part was militia.

342 Victory obtained by Lord Cornwallis over General Gates.

343 Lieut. Col. Tarleton

Lieutenant-colonel Tarleton, who had greatly distinguished himself in this action, was despatched the following day, with some cavalry and light infantry, amounting to about 350 men, to attack a corps of Americans under General Sumpter. He executed this service with great activity and military address. He procured good information of Sumpter's movements; and by forced and concealed marches came up with and surprised him on the middle of the day on the 18th, near the Catawba fords. He totally destroyed or dispersed his detachment, which consisted of 700 men, killing 150 on the spot, and taking two pieces of brass cannon, 300 prisoners, and 44 waggons.

344 General Arnold deserts the service of congress.

Not long after these events, means were found to detach Major-general Arnold, who had engaged so ardently in the cause of America, and who had exhibited so much bravery in the support of it, from the interests of the congress. Major André, adjutant-general to the British army, was a principal agent in this transaction; or, if the overture of joining the king's troops came first from Arnold, this gentleman was the person employed to concert the affair with him. More must have been originally comprehended in the scheme than the mere desertion of the American cause by Arnold: but whatever designs had been formed for promoting the views of the British government, they were frustrated by the apprehending of Major André. He was taken in disguise, after having assumed a false name, on the 23d of September, by three American soldiers; to whom he offered considerable rewards if they would have suffered him to escape, but without effect. Several papers written by Arnold were found upon him; and when Arnold had learned that Major André was seized, he found means to get on board a barge, and to escape to one of the king's ships.

345 Unhappy fate of Major André

General Washington referred the case of Major André to the examination and decision of a board of general officers, consisting of Major-general Greene, Major-general Lord Sterling, Major-general the Marquis de la Fayette, Major-general the Baron de Stenben, two other major-generals, and eight brigadier-generals. Major André was examined before them, and the particulars of his case inquired into; and they reported to the American commander in chief, that Mr Andre came on shore from the Vulture sloop of war in the night, on an interview with General Arnold, in a private and secret manner; that he changed his dress within the American lines; and, under a feigned name and in a disguised habit, passed the American works at

America. Stoney and Verplank's Points, on the evening of the 22d of September; that he was taken on the morning of the 23d at Tarry-town, he being then on his way for New York; and that, when taken, he had in his poſſeſſion ſeveral papers which contained intelligence for the enemy. They therefore determined, that he ought to be conſidered as a ſpy from the enemy; and that, agreeable to the law and uſage of nations, he ought to ſuffer death. Sir Henry Clinton, Lieutenant-general Robertſon, and the late American general Arnold, all wrote preſſing letters to General Waſhington on the occaſion, in order to prevent the deciſion of the board of general officers from being put in force: But their applications were ineffectual. Major André was hanged at Tappan, in the province of New York, on the 2d of October. He met his fate with great firmneſs; but appeared ſomewhat hurt that he was not allowed a more military death, for which he had ſolicited. He was a gentleman of very amiable qualities, had a taſte for literature and the fine arts, and poſſeſſed many accompliſhments. His death, therefore, was regretted even by his enemies; and the ſeverity of the determination concerning him was much exclaimed againſt in Great Britain. It was, however, generally acknowledged by impartial perſons, that there was nothing in the execution of this unfortunate gentlemen but what was perfectly conſonant to the rules of war.

346 His amiable character.

Arnold was made a brigadier-general in the king's ſervice, and publiſhed an addreſs to the inhabitants of America, dated from New York, October 7. in which he endeavoured to juſtify his deſertion of their cauſe. He ſaid, that when he firſt engaged in it, he conceived the rights of his country to be in danger, and that duty and honour called him to her defence. A redreſs of grievances was his only aim and object; and therefore he acquieſced unwillingly in the declaration of independence, becauſe he thought it precipitate. But what now induced him to deſert their cauſe was the diſguſt he had conceived at the French alliance, and at the refuſal of congreſs to comply with the laſt terms offered by Great Britain, which he thought equal to all their expectations and to all their wiſhes.

347 Motives aſſigned by Arnold for his conduct.

348 Different reaſons alleged by the Americans.

The Americans, however, accounted for the conduct of Arnold in a different manner. They alleged, that he had ſo involved himſelf in debts and difficulties by his extravagant manner of living in America, that he had rendered it very inconvenient for him to continue there: that after the evacuation of Philadelphia by the Britiſh troops, Arnold being inveſted with the command in that city, had made the houſe of Mr Penn, which was the beſt in the city, his head quarters. This he had furniſhed in an elegant and expenſive manner, and lived in a ſtyle far beyond his income. It was manifeſt, they ſaid, that he could at firſt have no great averſion to the French alliance, becauſe that when M. Gerard, miniſter plenipotentiary from the court of France, arrived at Philadelphia in July 1778, General Arnold early and earneſtly ſolicited that miniſter, with his whole ſuite, to take apartments and bed and board at his houſe, until a proper houſe could be provided by the order of the congreſs. This offer M. Gerard accepted, and continued with him ſome weeks. The French miniſter reſided upwards of 14 months in Philadelphia; during which time General Arnold kept up the moſt friendly and intimate acquaintance with him, and there was a continued interchange of dinners, balls, routes, and concerts: ſo that M. Gerard muſt have believed, that in General Arnold he had found and left one of the warmeſt friends the court of France had in America. He was alſo one of the firſt in congratulating the Chevalier la Luzerne, the ſecond French miniſter. About this time complaints and accuſations were exhibited againſt him by the government of Philadelphia for divers mal-practices; among which charges were, the appropriation of goods and merchandiſe to his own uſe, which he had ſeized as Britiſh property in Philadelphia in July 1778. It was determined by a court-martial, that his conduct was highly reprehenſible; but he was indulgently treated, and was therefore only reprimanded by the commander in chief General Waſhington. It was in theſe circumſtances, the Americans ſaid, bankrupted in reputation and fortune, loaded with debts, and having a growing and expenſive family, that General Arnold firſt turned his thoughts towards joining the royal arms. America.

349 Actions in South Carolina.

After the defeat of General Gates by Earl Cornwallis, that nobleman exerted himſelf to the utmoſt in extending the progreſs of the Britiſh arms, and with conſiderable effect. But one enterpriſe, which was conducted by Major Ferguſon, proved unſucceſsful. That officer had taken abundant pains to diſcipline ſome of the Tory militia, as they were termed; and with a party of theſe and ſome Britiſh troops, amounting in the whole to about 1400 men, made incurſions into the country. But on the 7th of October he was attacked by a ſuperior body of Americans at a place called King's Mountain, and totally defeated. One hundred and fifty were killed in the action, and 810 made priſoners, of whom 150 were wounded. Fifteen hundred ſtands of arms alſo fell into the hands of the Americans, whoſe loſs was inconſiderable. But the following month Lieutenant-colonel Tarleton, who continued to exert his uſual activity and bravery, with a party of 170, chiefly cavalry, attacked and defeated General Sumpter, who is ſaid to have had 1000 men, at a place called Black Stocks. Sumpter was wounded, and about 120 of the Americans killed, wounded, or taken. Of the Britiſh troops about 50 were killed and wounded.

350 Capture of Mr Laurens.

On the 3d of September, the Mercury, a congreſs packet, was taken by the Veſtal, Captain Keppel, near Newfoundland. On board this packet was Mr Laurens, late preſident of the congreſs, who was bound on an embaſſy to Holland. He had thrown his papers overboard, but great part of them were recovered without having received much damage. He was brought to London, and examined before the privy council; in conſequence of which he was committed cloſe priſoner to the Tower on the 6th of October, on a charge of high treaſon. His papers were delivered to the miniſtry, and contributed to facilitate a rupture with Holland, as among them was found the ſketch of a treaty of amity and commerce between the republic of Holland and the United States of America.

At the beginning of the year 1781, an affair happened in America, from which expectations were formed by Sir Henry Clinton, that ſome conſiderable advantage might be derived to the royal cauſe. The

long

America.

long continuance of the war, and the difficulties under which the congreſs laboured, had prevented their troops from being properly ſupplied with neceſſaries and conveniences. In conſequence of this, on the 1ſt of January, the American troops that were hutted at Morris Town, and who formed what was called the *Pennſylvania line*, turned out, being in number about 1300, and declared, that they would ſerve no longer, unleſs their grievances were redreſſed, as they had not received their pay, or been furniſhed with the neceſſary clothing or proviſions. It is ſaid that they were ſomewhat inflamed with liquor, in conſequence of rum having been diſtributed to them more liberally than uſual, New-year's-day being conſidered as a kind of feſtival. A riot enſued, in which an officer was killed, and four wounded; five or ſix of the inſurgents were alſo wounded. They then collected the artillery, ſtores, proviſions, and waggons, and marched out of the camp. They paſſed by the quarters of General Wayne, who ſent a meſſage to them, requeſting them to deſiſt, or the conſequences would prove fatal. They refuſed, and proceeded on their march till the evening, when they took poſt on an advantageous piece of ground, and elected officers from among themſelves. On the ſecond, they marched to Middlebrook, and on the third to Princetown, where they fixed their quarters. On that day a flag of truce was ſent to them from the officers of the American camp, with a meſſage, deſiring to know what were their intentions. Some of them anſwered, that they had already ſerved longer than the time for which they were inliſted, and would ſerve no longer; and others, that they would not return, unleſs their grievances were redreſſed. But at the ſame time they repeatedly, and in the ſtrongeſt terms, denied being influenced by the leaſt diſaffection to the American cauſe, or having any intentions of deſerting to the enemy.

351 Diſcontents among the American troops.

352 Revolt of the Pennſylvania line.

Intelligence of this tranſaction was ſoon conveyed to New York. A large body of Britiſh troops were immediately ordered to hold themſelves in readineſs to move on the ſhorteſt notice, it being hoped that the American revolters might be induced to join the royal army. Meſſengers were alſo ſent to them from General Clinton, acquainting them that they ſhould directly be taken under the protection of the Britiſh government; that they ſhould have a free pardon for all former offences; and that the pay due to them from the congreſs ſhould be faithfully paid them, without any expectation of military ſervice, unleſs it ſhould be voluntary, upon condition of their laying down their arms and returning to their allegiance. It was alſo recommended to them to move beyond the South river; and they were aſſured, that a body of Britiſh troops ſhould be ready to protect them whenever they deſired it. Theſe propoſitions were rejected with diſdain; and they even delivered up two of Sir Henry Clinton's meſſengers to the congreſs. Joſeph Reed, Eſq. preſident of the ſtate of Pennſylvania, afterwards repaired to them at Princetown, and an accommodation took place: ſuch of them as had ſerved out their full terms were permitted to return to their own homes, and others again joined the American army, upon receiving ſatisfactory aſſurances that their grievances ſhould be redreſſed.

353 Ineffectual attempts to induce them to join the royal army.

354 Exertions of Lord Cornwallis in North Carolina.

Lord Cornwallis now began to make very vigorous exertions, in order to penetrate into North Carolina. On the 11th of January his lordſhip's army was in motion, and advancing towards that province; but was ſomewhat delayed by an attempt made by the Americans, under General Morgan, to make themſelves maſters of the valuable diſtrict of Ninety-ſix. In order to prevent this, Lord Cornwallis detached Lieutenant colonel Tarleton, with 300 cavalry, 300 light infantry, the 7th regiment, the firſt battalion of the 71ſt regiment, and two three-pounders, to oppoſe the progreſs of Morgan, not doubting but that he would be able to perform this ſervice effectually. The Britiſh troops came up with the Americans under General Morgan on the 17th of January. The Americans were drawn up in an open wood, and having been lately joined by ſome militia, were more numerous than the Britiſh troops under Lieutenant-colonel Tarleton; but the latter were ſo much better diſciplined, that they had the utmoſt confidence of obtaining a ſpeedy victory. The attack was begun by the firſt line of infantry, conſiſting of the 7th regiment and a corps of light infantry, with a troop of cavalry placed on each flank. The firſt battalion of the 71ſt and the remainder of the cavalry formed the reſerve. The American line ſoon gave way, and their militia quitted the field; upon which the royal troops, ſuppoſing the victory already gained, engaged with ardour in the purſuit, and were thereby thrown into ſome diſorder. General Morgan's corps, who were ſuppoſed to have been routed, then immediately faced about, and threw in a heavy fire upon the king's troops, which occaſioned the utmoſt confuſion amongſt them: and they were at length totally defeated by the Americans. Four hundred of the Britiſh infantry were either killed, wounded, or taken priſoners: the loſs of the cavalry was much leſs conſiderable; but the two three-pounders fell into the hands of the Americans, together with the colours of the 7th regiment; and all the detachment of royal artillery were either killed or wounded in defence of their colours. Lieutenant-colonel Tarleton, however, made another effort: having aſſembled about 50 of his cavalry, with which he charged and repulſed Colonel Waſhington's horſe, retook his baggage, and killed the Americans who were appointed to guard it. He then retreated to Hamilton's ford, near the mouth of Bullock's creek, carrying with him part of his baggage, and deſtroying the remainder.

355 Defeat of colonel Tarleton.

356 Operations in conſequence of that event.

This defeat of the troops under Tarleton was a ſevere ſtroke to Lord Cornwallis, as the loſs of his light infantry was a great diſadvantage to him. The day after that event, he employed in collecting the remains of Tarleton's corps, and in endeavouring to form a junction with General Leſlie, who had been ordered to march towards him with a body of Britiſh troops from Wyneſborough. Conſiderable exertions were then made by part of the army, without baggage, to retake the priſoners in the hands of the Americans, and to intercept General Morgan's corps on its retreat to the Catawba. But that American officer, after his defeat of Tarleton, had made forced marches up into the country, and croſſed the Catawba the evening before a great rain, which ſwelled the river to ſuch a degree, as to prevent the royal army from croſſing for ſeveral days; during which time the Britiſh priſoners were got over the Yadkin; whence they proceeded to Dan

America. River, which they alſo paſſed, and on the 14th of February had reached Court-houſe in the province of Virginia.

357 Lord Cornwallis marches through North Carolina.

Lord Cornwallis employed a halt of two days in collecting ſome flour, and in deſtroying ſuperfluous baggage and all his waggons, excepting thoſe laden with hoſpital ſtores, ſalt, and ammunition, and four reſerved empty in readineſs for ſick or wounded. Being thus freed from all unneceſſary encumbrances, he marched through North Carolina with great rapidity, and penetrated to the remoteſt extremities of that province on the banks of the Dan. His progreſs was ſometimes impeded by parties of the militia, and ſome ſkirmiſhes enſued, but he met with no very conſiderable oppoſition. On the firſt of February, the king's troops croſſed the Catawba at M'Cowan's Ford, where General Davidſon, with a party of American militia, was poſted in order to oppoſe their paſſage; but he falling by the firſt diſcharge, the royal troops made good their landing, and the militia retreated. When Lord Cornwallis arrived at Hillſborough, he erected the king's ſtandard, and invited, by proclamation, all loyal ſubjects to repair to it, and to ſtand forth and take an active part in aſſiſting his lordſhip to reſtore order and government. He had been taught to believe that the king's friends were numerous in that part of the country: but the event did not confirm the truth of the repreſentations that had been given. The royaliſts were but few in number, and ſome of them too timid to join the king's ſtandard. There were, indeed, about 200 who were proceeding to Hillſborough, under Colonel Pyle, in order to avow their attachment to the royal cauſe; but they were met accidentally, and ſurrounded by a detachment from the American army, by whom a number of them are ſaid to have been killed while they were begging for quarter, without making the leaſt reſiſtance. Meanwhile General Greene was marching with great expedition with the troops under his command, in order to form a junction with other corps of American troops, that he might thereby be enabled to put ſome effectual ſtop to the progreſs of Lord Cornwallis.

358 Large quantities of American ſtores deſtroyed.

In other places ſome conſiderable advantages were obtained by the royal arms. On the 4th of January, ſome ſhips of war, with a number of tranſports, on board which was a large body of troops under the command of Brigadier-general Arnold, arrived at Weſtover, about 140 miles from the capes of Virginia, where the troops immediately landed and marched to Richmond; which they reached without oppoſition, the militia that was collected having retreated on their approach. Lieutenant-colonel Simcoe marched from hence with a detachment of the Britiſh troops to Weſtham, where they deſtroyed one of the fineſt founderies for cannon in America, and a large quantity of ſtores and cannon. General Arnold, on his arrival at Richmond, found there large quantities of ſalt, rum, ſail-cloth, tobacco, and other merchandiſe; and that part of theſe commodities which was public property he deſtroyed. The Britiſh troops afterwards attacked and diſperſed ſome ſmall parties of the Americans, took ſome ſtores and a few pieces of cannon, and on the 20th of the ſame month marched into Portſmouth. On the 25th Captain Barclay, with ſeveral ſhips of war, and a body of troops under the command of Major Craig, arrived in Cape Fear river. The troops landed about nine miles from Wilmington, and on the 28th entered that town. It was underſtood that their having poſſeſſion of that town, and being maſters of Cape Fear river, would be productive of very beneficial effects to Lord Cornwallis. America.

General Greene having effected a junction about the 10th of March with a continental regiment of what were called *eighteen months men*, and two large bodies of militia belonging to Virginia and North Carolina, formed a reſolution to attack the Britiſh troops under the command of Lord Cornwallis. The American army marched from the High Rock Ford on the 12th of the month, and on the 14th arrived at Guildford. Lord Cornwallis, from the information he had received of the motions of the American general, concluded what were his deſigns. As they approached more nearly to each other, a few ſkirmiſhes enſued between ſome advanced parties, in which the king's troops had the advantage. On the morning of the 15th, Lord Cornwallis marched with his troops at daybreak in order to meet the Americans, or to attack them in their encampment. About four miles from Guildford, the advanced guard of the Britiſh army, commanded by Lieutenant-colonel Tarleton, fell in with a corps of the Americans, conſiſting of Lieutenant-colonel Lee's legion, ſome Black Mountain men and Virginian militia, with whom he had a ſevere ſkirmiſh, but whom he at length obliged to retreat. 359 Different ſkirmiſhes.

The greater part of the country in which the action happened is a wilderneſs, with a few cleared fields interſperſed. The American army, which was ſuperior to the royal in point of numbers, was poſted on a riſing ground about a mile and a half from Guildford court-houſe. It was drawn up in three lines: the front line was compoſed of the North Carolinian militia, under the command of the generals Butler and Eaton; the ſecond line, of Virginian militia, commanded by the generals Stephens and Lawſon, forming two brigades; the third line, conſiſting of two brigades, one of Virginia and one of Maryland continental troops, commanded by General Huger and Colonel Williams. Lieutenant-colonel Waſhington, with the dragoons of the firſt and third regiments, a detachment of light infantry compoſed of continental troops, and a regiment of riflemen under Colonel Lynch, formed a corps of obſervation for the ſecurity of their right flank. Lieutenant-colonel Lee, with his legion, a detachment of light infantry, and a corps of riflemen under Colonel Campbell, formed a corps of obſervation for the ſecurity of their left flank. The attack of the American army was directed to be made by Lord Cornwallis in the following order: On the right, the regiment of Boſe and the 71ſt regiment, led by Major-general Leſlie, and ſupported by the firſt battalion of guards; on the left, the 23d and 33d regiments, led by Lieutenant-colonel Webſter, and ſupported by the grenadiers and ſecond battalion of guards commanded by Brigadier-general O'Hara: the Yagers and light infantry of the guards remained in a wood on the left of the guns, and the cavalry in the road, ready to act as circumſtances might require. 360 Battle at Guildford.

About half an hour after one in the afternoon, the action commenced by a cannonade, which laſted about twenty minutes; when the Britiſh troops advanced in three

America. three columns and attacked the North Carolinian brigades with great vigour, and ſoon obliged part of theſe troops, who behaved very ill, to quit the field; but the Virginian militia gave them a warm reception, and kept up a heavy fire for a long time, till being beaten back, the action became general almoſt everywhere. The American corps under the lieutenant-colonels Waſhington and Lee were alſo warmly engaged, and did conſiderable execution. Lieutenant-colonel Tarleton had directions to keep his cavalry compact, and not to charge without poſitive orders, excepting to protect any of the corps from the moſt evident danger of being defeated. The exceſſive thickneſs of the woods rendered the Britiſh bayonets of little uſe, and enabled the broken corps of Americans to make frequent ſtands with an irregular fire. The ſecond battalion of the guards firſt gained the clear ground near Guildford court-houſe, and found a corps of continental infantry, ſuperior in number, formed in an open field on the left of the road. Deſirous of ſignalizing themſelves, they immediately attacked and ſoon defeated them, taking two ſix-pounders: but as they purſued the Americans into the wood with too much ardour, they were thrown into confuſion by a heavy fire, and inſtantly charged and driven back into
361 The Americans defeated. the field by Lieutenant-colonel Waſhington's dragoons, with the loſs of the ſix-pounders they had taken. But the American cavalry were afterwards repulſed, and the two ſix-pounders again fell into the hands of the Britiſh troops. The ſpirited exertions of Brigadier-general O'Hara and of Lieutenant-colonel Tarleton, greatly contributed to bring the action to a termination. The Britiſh troops having at length broken the ſecond Maryland regiment, and turned the left flank of the Americans, got into the rear of the Virginian brigade, and appeared to be gaining their right, which would have encircled the whole of the continental troops, when General Greene thought it proper to order a retreat. Many of the American militia diſperſed in the woods; but the continental troops retreated in good order to the Reedy Fork river, and croſſed at the ford about three miles from the field of action, and there halted. When they had collected their ſtragglers, they retreated to the iron works, 10 miles diſtant from Guildford, where they encamped. They loſt their artillery and two waggons laden with ammunition. It was a hard-fought action, and laſted an hour and a half. Of the Britiſh troops, the loſs, as ſtated by Lord Cornwallis, was 532 killed, wounded, and miſſing. General Greene, in his account of the action tranſmitted to the congreſs, ſtated the loſs of the continental troops to amount to 329 killed, wounded, and miſſing; but he made no eſtimate of the loſs of the militia. Lieutenant-colonel Stuart was killed in the action; and Lieutenant-colonel Webſter, and the captains Schutz, Maynard, and Goodriche, died of the wounds that they received in it. Brigadier-general O'Hara, Brigadier-general Howard, and Lieutenant-colonel Tarleton, were alſo wounded. Of the Americans, the principal officer killed was Major Anderſon of the Maryland line, and the generals Stephens and Huger were wounded.

362 Hardſhips endured by the Britiſh troops. The Britiſh troops underwent great hardſhips in the courſe of this campaign; and in a letter of Lord Cornwallis's to Lord George Germain, dated March 17th, he obſerved, that "the ſoldiers had been two days without bread." His lordſhip quitted Guildford three days after the battle which was fought in that place, and on the 7th of April arrived in the neighbourhood of Wilmington. Soon after, General Greene, notwithſtanding his late defeat, endeavoured to make ſome vigorous attempts againſt the king's forces in South Carolina. Lord Rawdon had been appointed to defend the poſt of Camden, with about 800 Britiſh and provincials; and on the 19th of April General Greene appeared before that place with a large body of continentals and militia. He found it, however, impoſſible to attempt to ſtorm the town with any proſpect of ſucceſs; and therefore endeavoured to take ſuch a poſition as ſhould induce the Britiſh troops to ſally from their works. He poſted the Americans about a mile from the town, on an eminence which was covered with woods, and flanked on the left by an impaſſable ſwamp. But on the morning of the 25th, Lord Rawdon marched out of Camden, and with great gallantry attacked General Greene in his camp. The Americans made a vigorous reſiſtance, but were at laſt compelled to give way; and the purſuit is ſaid to have been continued three miles. For ſome time after the action commenced, General Gates entertained great hopes of defeating the Britiſh troops; in which, as the Americans were ſuperior in point of numbers, he would probably have ſucceeded, had not ſome capital military errors been committed by one or two of the officers who ſerved under him. On the American ſide Colonel Waſhington had behaved extremely well in this action, having made upwards of 200 of the Engliſh priſoners, with ten or twelve officers, before he perceived that the Americans were abandoning the field of battle. The loſs of the Engliſh was about one hundred killed and wounded. Upwards of 100 of the Americans were taken priſoners; and, according to the account publiſhed by General Greene, they had 126 killed and wounded. After this action, Greene retreated to Rugeley's mills, 12 miles from Camden, in order to collect his troops and wait for reinforcements.

363 General Greene attacked by Lord Rawdon, and defeated.

Notwithſtanding the advantage which Lord Rawdon had obtained over General Greene at Camden, that nobleman ſoon after found it neceſſary to quit that poſt; and the Americans made themſelves maſters of ſeveral other poſts that were occupied by the king's troops, and the garriſons of which were obliged to ſurrender themſelves priſoners of war. Theſe troops were afterwards exchanged under a cartel which took place between Lord Cornwallis and General Greene for the releaſe of all priſoners of war, in the ſouthern diſtrict.
364 Afterwards he lays ſiege to Ninety-ſix; but is repulſed. After theſe events, General Greene laid cloſe ſiege to Ninety-ſix, which was conſidered as the moſt commanding and important of all the poſts in the back country; and on the 19th of June he attempted to ſtorm the garriſon, but was repulſed by the gallantry of the Britiſh troops, with the loſs, as it is ſaid, of 75 killed and 120 wounded. General Greene then raiſed the ſiege, and retired with his army behind the Saluda, to a ſtrong ſituation within 16 miles of Ninety-ſix.

On the 18th of April a large body of Britiſh troops, under the command of Major-general Phillips and Brigadier-general Arnold, embarked at Portſmouth in Virginia, in order to proceed on an expedition for the purpoſe of deſtroying ſome of the American ſtores. As

America. party of light infantry were ſent ten or twelve miles up the Chickahomany; where they deſtroyed ſeveral armed ſhips, ſundry warehouſes, and the American ſtate ſhip-yards. At Peterſburgh, the Engliſh deſtroyed 4000 hogſheads of tobacco, one ſhip, and a number of ſmall veſſels on the ſtocks and in the river. At Cheſterfield court-houſe, they burnt a range of barracks for 2000 men and 300 barrels of flour. At a place called *Oſborn's*, they made themſelves maſters of ſeveral veſſels loaded with cordage and flour, and deſtroyed about 2000 hogſheads of tobacco, and ſundry veſſels were ſunk and burnt. At Warwick, they burnt a magazine of 500 barrels of flour, ſome fine mills belonging to Colonel Carey, a large range of public rope-walks and ſtorehouſes, tan and bark houſes full of hides and bark, and great quantities of tobacco. A like deſtruction of ſtores and goods was made in other parts of Virginia.

365 Deſtruction of American ſtores.

From the account already given of ſome of the principal military operations of the preſent year in America, it appears, that though conſiderable advantages had been gained by the royal troops, yet no event had taken place from which it could rationally be expected that the final termination of the war would be favourable to Great Britain. It was alſo a diſadvantageous circumſtance, that there was a miſunderſtanding between Admiral Arbuthnot and Sir Henry Clinton, and a mutual diſapprobation of each other's conduct. This was manifeſt from their deſpatches to government, and eſpecially from thoſe of General Clinton, whoſe expreſſions reſpecting the conduct of the admiral were by no means equivocal.

366 Unlucky miſunderſtanding between the Britiſh admiral and general.

On the 16th of March 1781, a partial action happened off the capes of Virginia, between the fleet under Admiral Arbuthnot, conſiſting of ſeven ſhips of the line and one fifty-gun ſhip, and a French ſquadron, conſiſting of the ſame number of ſhips of the line and one forty-gun ſhip. Some of the ſhips in both fleets received conſiderable damage in the action, and the loſs of the Engliſh was 30 killed and 73 wounded; but no ſhip was taken on either ſide. The Britiſh fleet had, however, conſiderably the advantage; as the French were obliged to retire, and were ſuppoſed to be prevented by this action from carrying troops up the Cheſapeak, in order to attack General Arnold and impede the progreſs of Lord Cornwallis. But it was an unfortunate circumſtance, that ſome time before this engagement, the Romulus, a ſhip of 44 guns, was captured by the French off the capes of Virginia.

367 Action between the Britiſh and French fleets off the capes Virginia.

Lord Cornwallis, after his victory over General Greene at Guildford, proceeded, as we have ſeen, to Wilmington, where he arrived on the 7th of April. But before he reached that place, he publiſhed a proclamation, calling upon all loyal ſubjects to ſtand forth and take an active part in reſtoring good order and government; and declaring to all perſons who had engaged in the preſent rebellion againſt his majeſty's authority, but who were now convinced of their error, and deſirous of returning to their duty and allegiance, that if they would ſurrender themſelves with their arms and ammunition at head-quarters, or to the officer commanding in the diſtrict contiguous to their reſpective places of reſidence, on or before the 20th of that month, they would be permitted to return to their homes upon giving a military parole; they would be protected in their perſons and properties from all ſorts of violence from the Britiſh troops; and would be reſtored as ſoon as poſſible to all the privileges of legal and conſtitutional government. But it does not appear that any conſiderable number of the Americans were allured by theſe promiſes to give any evidences of their attachment to the royal cauſe.

368 Proclamation by Lord Cornwallis.

Amer.

On the 20th of May, his lordſhip arrived at Peterſburgh in Virginia, where he joined a body of Britiſh troops that had been under the command of Major-general Philips; but the command of which, in conſequence of the death of that officer, had devolved upon Brigadier-general Arnold. Before this junction he had encountered conſiderable inconveniences from the difficulty of procuring proviſions and forage; ſo that in a letter to Sir Henry Clinton, he informed him, that his cavalry wanted every thing, and his infantry every thing but ſhoes. He added, that he had experienced the diſtreſſes of marching hundreds of miles in a country chiefly hoſtile, without one active or uſeful friend, without intelligence, and without communication with any part of the country.

On the 26th of June, about ſix miles from Williamſburgh, Lieutenant-colonel Simcoe, and 350 of the queen's rangers, with 80 mounted yagers, were attacked by a much ſuperior body of the Americans; but whom they repulſed with great gallantry and with equal ſucceſs, making four officers and twenty private men priſoners. The loſs of the Americans in this action is ſaid to have been upwards of 120, and that of the Britiſh troops not more than 40.

369 Different actions.

On the 6th of July an action happened near the Green Springs in Virginia, between a reconnoitring party of the Americans under General Wayne, amounting to about 800, and a large part of the Britiſh army under Lord Cornwallis; in which the Americans had 127 killed and wounded, and the loſs of the royal troops is ſuppoſed to have been conſiderably greater. It was an action in which no ſmall degree of military ſkill and courage was exhibited by the Americans. In a variety of ſkirmiſhes, the marquis La Fayette very much diſtinguiſhed himſelf, and diſplayed the utmoſt ardour in the American cauſe.

In South Carolina, an action happened on the 9th of September near the Eata Springs, between a large body of Britiſh troops under the command of Lieutenant-colonel Stuart, and a much ſuperior body of Americans, ſaid to amount to more than 4000, under the command of General Greene. It was an obſtinate engagement, and laſted near two hours; but the Americans were defeated, and two of their ſix pounders fell into the hands of the Engliſh. The loſs, however, of the royal troops was very conſiderable; amounting to more than 400 killed and wounded, and upwards of 200 miſſing,

370 General Greene defeated by Col. Stuart.

In the courſe of the ſame month, General Arnold was ſent on an expedition againſt New London, in Connecticut, where he deſtroyed a great part of the ſhipping, and an immenſe quantity of naval ſtores, European manufactures, and Eaſt and Weſt India commodities. The town itſelf was alſo burnt, which is ſaid to have been unavoidable, on account of the exploſions of great quantities of gunpowder which happened to be in the ſtorehouſes that were ſet on fire. A fort, of which it was thought neceſſary to gain poſſeſſion in

371 Expedition againſt New London.

this

America. this expedition, was not taken without conſiderable loſs. This was Fort Griſwold; which was defended by the Americans with great gallantry, and the aſſault was made by the Engliſh with equal bravery. The Britiſh troops entered the works with fixed bayonets, and were oppoſed with great vigour by the garriſon with long ſpears. After a moſt obſtinate defence of near forty minutes, the aſſailants gained poſſeſſion of the fort, in which 85 Americans were found dead, and 60 wounded, moſt of them mortally. Of the Britiſh troops Major Montgomery was killed by a ſpear in entering the American works; and 192 men were alſo killed and wounded in this expedition.

372 Critical ſituation of Lord Cornwallis.

Notwithſtanding the ſignal advantages that Lord Cornwallis had obtained over the Americans, his ſituation in Virginia began by degrees to be very critical; and the rather becauſe he did not receive thoſe reinforcements and ſupplies from Sir Henry Clinton, of which he had formed expectations, and which he conceived to be neceſſary to the ſucceſs of his operations. Indeed, the commander in chief was prevented from ſending thoſe reinforcements to Lord Cornwallis which he otherwiſe might have done, by his fears reſpecting New York, againſt which he entertained great apprehenſions that General Waſhington intended to make a very formidable attack. In fact, that able American general appears to have taken much pains, and to have employed great fineſſe, in order to lead Sir Henry Clinton to entertain this imagination. Letters, expreſſive of this intention, fell into the hands of Sir Henry, which were manifeſtly written with a deſign that they ſhould be intercepted, and only with a view to amuſe and deceive the Britiſh general. The project was ſucceſsful; and by a variety of judicious military manœuvres, in which he completely out-generalled the Britiſh commander, he increaſed his apprehenſions about New York, and prevented him from ſending proper aſſiſtance to Lord Cornwallis. Having for a conſiderable time kept Sir Henry Clinton in perpetual alarm in New York, though with an army much inferior to the garriſon of that city, General Waſhington ſuddenly quitted his camp at White Plains, croſſed the Delaware, and marched towards Virginia, apparently with a deſign to attack Lord Cornwallis. Sir Henry Clinton then received information, that the count de Graſſe, with a large French fleet, was expected every moment in the Cheſapeak, in order to co-operate with General Waſhington. He immediately endeavoured both by land and water, to communicate this information to Lord Cornwallis; and alſo ſent him aſſurances that he would either reinforce him by every poſſible means in his power, or make the beſt diverſion he could in his favour. In the mean time, Lord Cornwallis had taken poſſeſſion of the poſts of York Town and Gloucester in Virginia, where he fortified himſelf in the beſt manner he was able.

373 Ineffectual attempts to afford him aſſiſtance.

On the 28th of Auguſt, Sir Samuel Hood, with a ſquadron from the Weſt Indies, joined the ſquadron under the command of Admiral Graves before New York. It was then neceſſary, on account of the ſituation of Lord Cornwallis, that they ſhould immediately proceed to the Cheſapeak; but ſome time appears to have been needleſsly loſt, though Admiral Hood was extremely anxious that no delay might be made. They arrived, however, in the Cheſapeak, on the 5th of September, with 19 ſhips of the line; where they found America. the count de Graſſe, who had anchored in that bay on the 30th of Auguſt, with 24 ſhips of the line. The French admiral had previouſly landed a large body of troops, which had been brought from Rhode iſland, and who immediately marched to join the American army under General Waſhington. The Britiſh and French fleets came to an action on the ſame day in which the former arrived in the Cheſapeak. On board the Britiſh fleet 90 were killed and 246 wounded; ſome of the ſhips were greatly damaged in the engagement, and the Terrible, a 74 gun ſhip, was ſo much ſhattered, that it was afterwards found neceſſary to ſet fire to it. That this action had not been favourable to the Engliſh, was manifeſt from the event: the fleets continued in ſight of each other for five days ſucceſſively, and ſometimes were very near; but at length the French fleet all anchored within the Cape, ſo as to block up the paſſage. Admiral Graves, who was the commander in chief, then called a council of war, in which it was reſolved that the fleet ſhould proceed to New York, that the ſhips might be there put into the beſt ſtate for the ſervice: and thus were the French left maſters of the navigation of the Cheſapeak.

374 Action between the Britiſh and French fleets off the Cheſapeak.

Before the news of this action had reached New York, a council of war was held there, in which it was reſolved, that 5000 men ſhould be embarked on board the king's ſhips, in order to proceed to the aſſiſtance of Lord Cornwallis. But when it was known that the French were abſolute maſters of the navigation of the Cheſapeak, it was thought inexpedient to ſend off that reinforcement immediately. In another council of war, it was reſolved, that as Lord Cornwallis had proviſions to laſt him till the end of October, it was adviſable to wait for more favourable accounts from Admiral Graves, or for the arrival of Admiral Digby, who was expected with three ſhips of the line. It was not then known at New York, that Admiral Graves had determined to return with the whole fleet to that port.

375 Danger of Lord Cornwallis increaſed.

In the mean time, the moſt effectual meaſures were adopted by General Waſhington for ſurrounding the Britiſh army under Lord Cornwallis. A large body of French troops, under the command of Lieutenant-general the count de Rochambeau, with a very conſiderable train of artillery, aſſiſted in the enterpriſe. The Americans amounted to near 8000 continentals and 5000 militia. General Waſhington was inveſted with the authority of commander in chief of theſe combined forces of America and France. On the 29th of September, the inveſtment of York Town was complete, and the Britiſh army quite blocked up. The day following, Sir Henry Clinton wrote a letter to Lord Cornwallis, containing aſſurances that he would do every thing in his power to relieve him, and ſome information concerning the ſteps that would be taken for that purpoſe. A duplicate of this letter was ſent to his lordſhip by Major Cochran on the 3d of October. That gentleman, who was a very gallant officer, went in a veſſel to the capes, and made his way to Lord Cornwallis, through the whole French fleet, in an open boat. He got to York Town on the 10th of the month; and ſoon after his arrival had his head carried off by a cannon ball.

After the return of Admiral Graves to New York, a council of war was held, conſiſting of flag and gene-

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ral officers; in which it was resolved, that a large body of troops should be embarked on board the king's ships as soon as they were refitted, and that the exertions of both fleet and army should be made in order to form a junction with Lord Cornwallis. Sir Henry Clinton himself embarked on board the fleet, with upwards of 7000 troops, on the 18th; they arrived off Cape Charles, at the entrance of the Chesapeak, on the 24th, where they received intelligence that Lord Cornwallis had been obliged to capitulate five days before.

376 Late arrival of General Clinton.

377 Lord Cornwallis's army obliged to surrender.

It was on the 19th of October that Lord Cornwallis surrendered himself and his whole army, by capitulation, prisoners to the combined armies of America and France, under the command of General Washington. He made a defence suitable to the character he had before acquired for courage and military skill; but was compelled to submit to untoward circumstances and superior numbers. It was agreed by the articles of capitulation, that the British troops were to be prisoners to the United States of America, and the seamen to the French king, to whose officers also the British vessels found at York Town and Gloucester were to be delivered up. The British prisoners amounted to more than 6000; but many of them, at the time of surrender, were incapable of duty. A considerable number of cannon, and a large quantity of military stores, fell into the hands of the Americans on this occasion.

As no rational expectation now remained of a subjugation of the colonies, the military operations that succeeded in America were of little consequence. Some inconsiderable actions and skirmishes did indeed take place after that event; in which the refugees chiefly distinguished themselves, and discovered an inveterate animosity against the Americans. On the 5th of May 1782, Sir Guy Carleton arrived at New York, being appointed to the command of the British troops in America in the room of Sir Henry Clinton. Two days after his arrival, he wrote a letter to General Washington, acquainting him, that Admiral Digby was joined with himself in a commission to treat of peace with the people of America; transmitting to him, at the same time, some papers tending to manifest the pacific disposition of the government and people of Britain towards those of America. He also desired a passport for Mr Morgan, who was appointed, to transmit a similar letter of compliment to the congress. General Washington declined signing any passport till he had taken the opinion of congress upon that measure; and by them he was directed to refuse any passport for such a purpose. However, another letter was sent to General Washington, dated the 2d of August, and signed by Sir Guy Carleton and Rear-admiral Digby, in which they informed him, that they were acquainted by authority that negotiations for a general peace had already commenced at Paris; that Mr Grenville was invested with full powers to treat with all the parties at war; and was then at Paris in the execution of his commission. They farther informed him, that his majesty, in order to remove all obstacles to that peace which he so ardently wished to restore, had commanded his ministers to direct Mr Grenville, that the independency of the thirteen provinces should be proposed by him, in the first instance, instead of making it the condition of a general treaty. But some jealousies were entertained by the Americans, that it was the design of the British court either to disunite them, or to bring them to treat of a peace separately from their ally the king of France: they therefore resolved, that any man, or body of men, who should presume to make any separate or partial convention or agreement with the king of Great Britain, or with any commissioner or commissioners under the crown of Great Britain, ought to be considered and treated as open and avowed enemies of the United States of America; and also that those states could not with propriety hold any conference or treaty with any commissioners on the part of Great Britain, unless they should, as a preliminary thereto, either withdraw their fleets and armies, or else, in positive or express terms, acknowledge the independence of the said states. They likewise resolved, that any propositions which might be made by the court of Great Britain, in any manner tending to violate the treaty subsisting between them and the king of France, ought to be treated with every mark of indignity and contempt.

378 Sir Guy Carleton arrives at New York with powers to treat of peace.

America.

379 Resolutions of congress in consequence thereof.

In the month of June, the town of Savannah, and the whole province of Georgia, were evacuated by the king's troops; as was also Charlestown, South Carolina, about the close of the year. In the mean time, the negotiations for peace being continued, provisional articles of peace were signed at Paris on the 30th of November by the commissioner of his Britannic majesty and the American commissioners, in which his majesty acknowledged the united colonies of New Hampshire, Massachusets Bay, Rhode Island and Providence Plantations, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Georgia, to be "free, sovereign, and independent states." They had constituted themselves such on the 4th of July 1776; they had been acknowledged such by the French king on the 30th of January 1778, when he concluded with them a treaty of amity and commerce; Holland had acknowledged them as such April 19th 1782; Sweden acknowledged them as such February 5th 1783; Denmark the 25th February, Spain in March, and Russia in July, the same year.

380 Different places evacuated by the king's troops.

381 Independency of America acknowledged.

According to the report of the committee appointed for that purpose, the *Foreign Debt* of the United States incurred by the war, amounted to 7,885,085 dollars, and the *Domestic Debt* to 34,115,290; total at 4s. 6d. each, equal to 9,450,084l. sterling, the interest of which at 6 per cent. is 567,005l. But the cost to Great Britain is moderately computed at 115,654,914l. and the additional annual burden by it 4,557,575l. since January 1775. As to the loss of men during the unhappy war, the States of America, according to authentic estimates, lost by the sword and in prison near 80,000 men; and by the British returns at New York, the number of soldiers killed in the service amounted to 43,633.

382 Loss of men and treasure by the war.

Such was the end of the contest between Great Britain and America: A contest in which the latter attained to an independant rank among the nations, that may be productive of more important consequences that can yet be foreseen; and in which the former, happily for herself, was forced to relinquish a sovereignty that served only to repress her own internal industry,

383 General consequences.

America. industry, and retard her prosperity. She has, in the event, only suffered a diminution of unwieldy empire, which has been more than compensated by an increase of population, commerce, revenues, and wealth.

384 Constitution of the American States.

As to the general constitution of the American States: By the acts of confederation and perpetual union, each of the colonies contracted a reciprocal treaty of alliance and friendship for their common defence, for the maintenance of their liberties, and for their general and mutual advantage; obliging themselves to assist each other against all violence that might threaten all, or any one of them, and to repel in common all the attacks that might be levelled against all, or any one of them, on account of religion, sovereignty, commerce, or under any other pretext whatsoever. Each of the colonies reserved to itself alone the exclusive right of regulating its internal government, and of framing laws in all matters not included in the articles of confederation.—But for the more convenient management of the general interest of the United States, it was determined, that delegates should be annually appointed in such manner as the legislature of each state should direct, to meet in congress on the first Monday of November of every year, with a power reserved to each state to recall its delegates, or any of them, at any time within the year, and to send others in their stead for the remainder of the year. No state is to be represented in congress by less than two, nor more than seven members; and no person is capable of being a delegate for more than three years, in any term of six years; nor is any person, being a delegate, capable of holding any office under the United States, for which he, or any other for his benefit, shall receive any salary, fees, or emolument of any kind. In determining questions in the United States, in congress assembled, each state is to have one vote. Every state is to abide by the determinations of the United States in congress assembled, on all questions which are submitted to them by the confederation. The articles of confederation are to be inviolably observed by every state, and the union is to be perpetual; nor is any alteration, at any time hereafter, to be made in any of them, unless such alteration be agreed to in a congress of the United States, and be afterwards confirmed by the legislature of every state.

385 Immediate consequences of the revolution to America.

In the mean time, the return of peace was very far from immediately producing in the United States, all that tranquillity and prosperity, which the eager supporters of the revolution had promised to themselves and their country. The public finances were in such a state of entire derangement, as rendered it utterly impossible to make payment of the arrears due to the army. Accordingly the whole officers and soldiers that composed this body, which at the end of a long war, is always so formidable and dangerous to a free state, were extremely discontented. Attempts were made, by anonymous publications, to inflame their minds, which were already sufficiently agitated, and to induce them to unite in redressing their own grievances, while they had still arms in their hands. During the time that matters were in this state, had the commander in chief of the army been a less virtuous man, it is not impossible, that the freedom of America might have been overturned, and these colonies might have exchanged the mild government of Britain, for a military usurpation. It immediately appeared, however, that Gen. [illegible] Washington was greatly superior to the temptations of vulgar ambition. He summoned a meeting of the general and field officers, with a deputation of an officer from each company, and a proper representation from the staff of the army. Previous to the meeting, he sent for each officer, and enlarged in private on the fatal consequences to their country, and on the loss of reputation to the whole army, which would result from intemperate resolutions. When the day arrived on which they had been summoned to assemble, the 15th of March 1783, he addressed them in a speech, well calculated to produce calmness and moderation. He promised to exert in their favour his whole influence, requesting them to rely on the public faith which had been pledged to them; and he conjured them "as they valued their honour, as they respected the rights of humanity, and as they regarded the military and national character of America, to express their utmost detestation of the men, who were attempting to open the flood-gates of civil discord, and to deluge their rising empire with blood." Having spoken thus, he retired. No reply was made to his speech; and while the assembly hesitated, the friends of tranquillity seized the happy moment, and proposed a resolution, which was carried without opposition, that no circumstances of distress or danger should induce the American army to sully their reputation by sedition, or to distrust the justice of their country.

386 Dismission of the army.

After all, however, the government was only able to give to the army four months pay, in place of the arrears of several years. Notwithstanding this great deficiency, the soldiers suffered themselves, with tolerable quietness, to be disbanded towards the fall of the year, care having been previously taken to get quit of great numbers of the men individually, by granting leave of absence to all that applied for it; in consequence of which, this dangerous body of veteran troops was soon scattered and lost in the immense extent of the American territory. The commander in chief proceeded to Annapolis, then the seat of congress, and on the 23d of December, resigned his commission to the president at a public audience. He immediately retired as a private person, to his farm of Mount Vernon, on the banks of the Potowmack in Virginia.

387 Embarrassments of the Americans.

But here the troubles of the country seemed only to commence. During the early periods of the revolution, amidst the dangers of the war, and while the public zeal for independence remained ardent, the defects of the form of government were not felt. From the mere strength which the public opinion conferred, the congress was able to levy armies, to raise extensive loans, and to conduct the war with vigour; but when immediate danger was removed, and the selfish passions had leisure to operate, its powers were soon found altogether inadequate to provide for the public welfare. Articles of confederation had indeed been entered into, with a view to confer more extensive powers upon congress, but still its authority was extremely defective. By these articles, it was entitled to require from the different states, the sums necessary for the war, and the public expences of the union: But as it had no power to legislate over individuals, but only over the states as political bodies, and possessed no means of coercion over such states as should neglect to make good the

America. payments with which they were aſſeſſed, the revenue of the union was ill paid, and all its exertions were enfeebled. The congreſs had no power of making general commercial regulations to bind the whole ſtates, nor could it even interfere to prevent their waging war againſt each other if they thought fit. Hence, from the mutual jealouſies of thirteen ſeparate legiſlatures, the moſt diſcordant regulations aroſe.

As ſoon as the war was at an end, Great Britain naturally treated the American ſtates as a foreign nation, and prohibited, under pain of confiſcation, any of their commodities to be conveyed to the Britiſh Weſt India iſlands, unleſs in Britiſh built veſſels, navigated by Britiſh mariners. Thus the Americans were excluded from that branch of commerce in which they had formerly obtained moſt of the ready money or ſpecie that came into their country. With a view to induce Great Britain to relax the ſeverity of this and other regulations, injurious to their commerce, ſome of the American ſtates impoſed heavy taxes upon goods of Britiſh manufacture. Other ſtates took advantage of this circumſtance, to invite the Britiſh merchants to frequent their ports excluſively, and not only received all Britiſh commodities free from any duty, but they ſuffered their people to engage in a ſmuggling traffic, for the tranſportation of theſe commodities into the ſtates in which they had been heavily taxed. Thus the ſame commodities which were ſeverely taxed at Philadelphia, were imported without difficulty or expence into the Jerſeys, on the oppoſite ſide of the Delaware, and were daily conveyed by illicit traders acroſs the river. Hence aroſe a ſpirit of commercial jealouſy, and a warfare between the different legiſlatures, which filled the whole country with a degree of diſſenſion, little ſhort of hoſtility.

The Americans were at the ſame time in a great meaſure excluded from the trade to the Mediterranean. They could no longer navigate that ſea with ſafety, a privilege which as Britiſh ſubjects they had always enjoyed. As the congreſs poſſeſſed no funds, wherewith to enter into a compromiſe with the piratical ſtates of Barbary, to whom all Europe pays tribute, the American veſſels were conſtantly expoſed to danger. Being unable to defend themſelves from the corſairs, they were obliged either to relinquiſh the beneficial trade which they had formerly poſſeſſed in that quarter, or to enſure it at a ruinous premium.

Independent of theſe partial evils, the general balance of trade ſpeedily became extremely unfavourable to the United States. The duties due from the merchants to Great Britain, the payment of which had been prohibited by congreſs during the war, were now impatiently demanded. The American merchants were almoſt univerſally ſued, and the remnant of their effects ſeized by the agents of Britiſh houſes. To relieve their own diſtreſs, they proceeded againſt the retailers, who had been unable to pay them during the war, and to whom peace had not yet reſtored proſperity. In this way the old traders were almoſt univerſally ruined, and compelled to abandon all commercial concerns. At the ſame time, however, as the ravages of armies and the want of a free communication between Europe and America during the war, had multiplied the wants of the latter, an inundation of European manufactures, was one of the firſt effects that followed the eſtabliſhment of peace. Theſe were purchaſed by the Ameri- America. cans far beyond their means of payment, and thus almoſt every perſon connected with commerce was brought to ruin, and a great part of the people were involved in their diſtreſs.

All theſe evils were aggravated by the want of an efficient government. Congreſs had incurred debts, and iſſued paper money for payment of the intereſt of theſe debts, or of the current public expences; but as it poſſeſſed no efficient revenue, its paper was ſoon depreciated, and became an object of ſpeculation. Diſhoneſt men paid their debts with it, and thus defrauded their creditors, and the morality of the people was ſeverely wounded. The ſeveral ſtates had themſelves alſo contracted debts for the war. Some ſtates willing to fund their debts, impoſed taxes for the purpoſe, which were ſo far beyond the means of the inhabitants, that they could not be levied without extreme rigour. The extremities to which government proceeded in theſe caſes, occaſioned general diſcontents, and even produced an inſurrection in the ſtate of Maſſachuſets.—From all theſe cauſes, an embarraſſed commerce, a depreciated paper money, which inundated all America, the inability of the laws to enforce payment of the taxes, a ſpirit of jealouſy between the different ſtates, and the inadequacy of congreſs to apply a remedy to theſe complicated evils, ſomething little ſhort of anarchy was produced in the United States.

388 Propoſal of a new conſtitution.

In the midſt of theſe calamities, a propoſition was made in 1785, in the houſe of delegates in Virginia, to appoint commiſſioners to meet ſuch commiſſioners as other ſtates might appoint, to form a ſyſtem of commercial regulations for the United States. Accordingly, ſeveral ſtates appointed commiſſioners, who, in 1786, aſſembled at Annapolis. But, as the ſtates were not all repreſented, and the commiſſioners thought their own powers too limited to authorize them to propoſe a proper remedy for the evils that preſſed upon their country, they agreed to recommend a general convention, to be held at Philadelphia the following year, with power to frame a general plan of government for the United States. In conſequence of this recommendation, in May 1787 delegates from all the ſtates, except Rhode Iſland, aſſembled at Philadelphia, and choſe General Waſhington for their preſident. They ſat four months, and deliberated in private. Their debates have never been publiſhed; but they are known to have been extremely animated. The public opinion was, at that period, by no means fixed with regard to the kind of government that ought to be adopted. At the commencement of the war, a conſiderable party diſliked the violent meaſures of their countrymen. At different periods about 30,000 men had been in the ſervice of Great Britain. This implied that a large body of royaliſts exiſted in America. Even of thoſe who diſliked the ſupremacy of Britain, and wiſhed to eſtabliſh American independence, many were by no means prepared to reliſh the whole principles of a republican government. When the queſtion, therefore, came to be agitated concerning the beſt political conſtitution for the United States, a variety of opinions were broached. Theſe, however, in a great meaſure reſolved themſelves into two ſyſtems: one party, at that time called *federaliſts*, wiſhed to eſtabliſh a conſtitution as purely republican as poſſible; and the other

389 Convention of Philadelphia.

party,

America. party, then called *antifederaliſts*, wiſhed to give the new government a monarchical character and tendency. It is even ſaid that ſome were not wanting who eagerly deſired to copy cloſely the model of the Britiſh conſtitution. This was not wonderful. Under the principles of that conſtitution Britain had become a great nation, and America had proſpered. It was the moſt free form of government at that time known. The vices which had crept into it were evidently independent of its radical ſtructure, and might eaſily be avoided in a new country. By adopting this tried and well-known form of government, it was ſaid that the hazard of new experiments would be avoided, and the ſtates might at once place themſelves in a ſecure train of proſperity. But the feelings of the people at the time were, upon the whole, hoſtile to theſe reaſonings. Their ſufferings, in conſequence of Britiſh hoſtility, were too recent to permit them to regard with complacency, in ſpeculation, a ſyſtem which in practice they had taught themſelves to diſlike. Their pride would not ſuffer them to become the ſervile imitators of another nation; and the public ſentiments were ſo generally republican, as to lead them to diſlike all kinds of permanent or hereditary ranks and privileges. Hence, when in the early ſittings of the convention of Philadelphia a plan was preſented, which propoſed the eſtabliſhment of a preſident for life, and ſenators for life, and expreſſed a deſire to render theſe offices hereditary, and to ſubject the laws of the reſpective ſtates to the review of the general government, it met with no adequate ſupport; and a committee was appointed to prepare a plan of a new conſtitution for the United States.

In addition to the diviſions that exiſted among the members of this convention, from their tendency to republican or to monarchical principles, they were alſo divided in conſequence of the different intereſts of their conſtituents. The votes were given by ſtates, and when the delegates of a ſtate differed in opinion, the majority was reckoned the vote of the ſtate. The greater ſtates, after a conſiderable conteſt, carried the point, that in the new houſe of repreſentatives, the repreſentation ſhould ſtand upon the baſis of the population of each ſtate, though they were under the neceſſity of conceding to the leſſer ſtates, that each ſtate ſhould be equally repreſented in the new ſenate. Virginia and the ſouthern ſtates, with the aid of the antifederaliſts, in oppoſition to the federaliſt or republican party, obtained the ſtrange privilege, in a nation of freemen, of numbering three fifths of their ſlaves as a part of their population in all queſtions about the number of their repreſentatives. In other queſtions, however, the delegates of the great ſtates frequently voted with the federaliſt party, though, upon the whole, the more zealous republicans were greatly diſguſted by many articles of the new conſtitution. Of theſe the celebrated Dr Franklin was one. He had the integrity and the moderation, however, on this occaſion, to prefer the peace of his country to his private political opinions; and when the plan was completed, he propoſed that it ſhould be ſigned by all the members of the convention, that from their apparent unanimity, it might have the better chance of being accepted by the different ſtates. "In the long career I have already run" (ſaid that eminent ſtateſman and philoſopher), "I have more than once been compelled to abandon opinions I had openly maintained, and which I thought well founded from the deep conſideration I had given them. As I grow older, I am more and more diſpoſed to queſtion my own judgment, and to pay reſpect to that of others. There are ſome men, as well as ſome religious ſects, who imagine that reaſon is entirely on their ſide; and that their opponents plunge deeper into error in proportion as they depart from their opinions. Struck with theſe examples, which are but too common, I accept of this conſtitution with all its faults, even ſuppoſing I am not miſtaken in my opinion of its faults; for I am perſuaded that a general government is neceſſary to our ſafety, and that no form of government that is well adminiſtered is incapable of producing the happineſs of the people; and I think there is reaſon to believe that this conſtitution will be well adminiſtered for a number of years, and that it will not end, as too many other governments have done, in deſpotiſm, unleſs the American people ſhall reach that degree of corruption in which, at once incapable of being directed by a free conſtitution, and unworthy of its bleſſings, deſpotiſm becomes neceſſary to their exiſtence. I therefore give my vote for this conſtitution, both becauſe, in the preſent circumſtances of this nation, I cannot hope to ſee one more perfect, and becauſe I am not ſure this is not as perfect as any it can have. I make a ſacrifice of the opinion I have expreſſed of its defects to the public happineſs. I have never uttered my objections out of this houſe; here they had their birth, and here I wiſh them to be for ever buried. If every one of us who have oppoſed the conſtitution, when we return to our conſtituents, were to unfold the motives of our oppoſition, and endeavour to gain partiſans to our ſide, perhaps we might prevent the unanimous adoption of the conſtitution; but, by this, we ſhould only loſe the advantage which the appearance of unanimity will give us with foreign nations, and indeed with our own people. The general good opinion of a nation reſpecting its government is as neceſſary as the wiſdom and integrity of its adminiſtration, to the happineſs of its people. I truſt, therefore, both for our own ſafety as members of the community, and for the ſake of our poſterity, that we ſhall be of one mind, in recommending this conſtitution wherever our influence reaches; and that afterwards our whole thoughts will be bent to its happy adminiſtration. I cannot forbear to form the wiſh that ſuch of us as ſtill entertain objections to this conſtitution will follow my example, and doubt a little of their infallibility, and ſign this conſtitutional act, that no queſtion may be left of our unanimity." The authority and example of Franklin prevailed, and the following conſtitution was unanimouſly tranſmitted by the convention to the different ſtates for their acceptance.

390 Speech of Franklin.

391 Conſtitution.

"We, the people of the United States, in order to form a more perfect union, eſtabliſh juſtice, inſure domeſtic tranquillity, provide for the common defence, promote the general welfare, and ſecure the bleſſing of liberty to ourſelves and our poſterity, do ordain and eſtabliſh this conſtitution for the United States of America.

Article I.

"*Section* 1. All legiſlative powers herein granted ſhall be veſted in a congreſs of the United States, which ſhall conſiſt of a ſenate and houſe of repreſentatives.

America. "*Sect.* 2. The houſe of repreſentatives ſhall be compoſed of members choſen every ſecond year by the people of the ſeveral ſtates; and the electors in each ſtate ſhall have the qualifications requiſite for electors of the moſt numerous branch of the ſtate legiſlature.

"No perſon ſhall be a repreſentative who ſhall not have attained to the age of 25 years, and been ſeven years a citizen of the United States; and who ſhall not, when elected, be an inhabitant of the ſtate in which he ſhall be choſen.

"Repreſentatives, and direct taxes, ſhall be apportioned among the ſeveral ſtates which may be included within this union, according to their reſpective numbers, which ſhall be determined by adding to the whole number of free perſons, including thoſe bound to ſervice for a term of years, and excluding Indians not taxed, three-fifths of all other perſons. The actual enumeration ſhall be made within three years after the firſt meeting of the congreſs of the United States, and within every ſubſequent term of ten years, in ſuch manner as they ſhall by law direct. The number of repreſentatives ſhall not exceed one for every 30,000: but each ſtate ſhall have at leaſt one repreſentative; and until ſuch enumeration ſhall be made, the ſtate of New Hampſhire ſhall be entitled to chooſe three, Maſſachuſets eight, Rhode Iſland and Providence Plantations one, Connecticut five, New York ſix, New Jerſey four, Pennſylvania eight, Delaware one, Maryland ſix, Virginia ten, North Carolina five, South Carolina five, and Georgia three.

"When vacancies happen in the repreſentation from any ſtate, the executive authority thereof ſhall iſſue writs of election to fill ſuch vacancies.

"The houſe of repreſentatives ſhall chooſe their ſpeaker and other officers; and ſhall have the ſole power of impeachment.

"*Sect.* 3. The ſenate of the United States ſhall be compoſed of two ſenators from each ſtate, choſen by the legiſlature thereof, for ſix years; and each ſenator ſhall have one vote.

"Immediately after they ſhall be aſſembled, in conſequence of the firſt election, they ſhall be divided, as equally as may be, into three claſſes. The ſeats of the ſenators of the firſt claſs ſhall be vacated at the expiration of the ſecond year; of the ſecond claſs, at the expiration of the fourth year; and the third claſs, at the expiration of the ſixth year; ſo that one-third may be choſen every ſecond year; and if vacancies happen by reſignation or otherwiſe, during the receſs of the legiſlature of any ſtate, the executive thereof may make temporary appointments until the next meeting of the legiſlature, which ſhall then fill ſuch vacancies.

"No perſon ſhall be a ſenator who ſhall not have attained to the age of 30 years, and been nine years a citizen of the United States, and who ſhall not, when elected, be an inhabitant of that ſtate for which he ſhall be choſen.

"The vice-preſident of the United States ſhall be preſident of the ſenate, but ſhall have no vote, unleſs they be equally divided.

"The ſenate ſhall chooſe their other officers, and alſo a preſident *pro tempore* in the abſence of the vice-preſident, or when he ſhall exerciſe the office of preſident of the United States.

"The ſenate ſhall have the ſole power to try all impeachments: When ſitting for that purpoſe they ſhall be on oath or affirmation. When the preſident of the United States is tried, the chief juſtice ſhall preſide: and no perſon ſhall be convicted without the concurrence of two-thirds of the members preſent. America.

"Judgment in caſes of impeachment ſhall not extend further than to removal from office, and diſqualification to hold and enjoy any office of honour, truſt, or profit under the United States; but the party convicted ſhall nevertheleſs be liable and ſubject to indictment, trial, judgment, and puniſhment, according to law.

"*Sect.* 4. The times, places, and manners of holding elections for ſenators and repreſentatives ſhall be preſcribed in each ſtate by the legiſlature thereof; but the congreſs may at any time, by law, make or alter ſuch regulations, except as to the placing or chooſing ſenators.

"The congreſs ſhall aſſemble at leaſt once in every year; and ſuch meeting ſhall be on the firſt Monday in December, unleſs they ſhall by law appoint a different day.

"*Sect.* 5. Each houſe ſhall be the judge of the elections, returns, and qualifications of its own members; and a majority of each ſhall conſtitute a quorum to do buſineſs; but a ſmall number may adjourn from day to day, and may be authorized to compel the attendance of abſent members, in ſuch manner, and under ſuch penalties, as each houſe may provide.

"Each houſe may determine the rules of its proceedings, puniſh its members for diſorderly behaviour, and, with the concurrence of two-thirds, expel a member.

"Each houſe ſhall keep a journal of its proceedings, and from time to time publiſh the ſame, excepting ſuch parts as may in their judgment require ſecrecy; and the yeas and nays of the members of either houſe on any queſtion ſhall, at the deſire of one-fifth of thoſe preſent, be entered on the journal.

"Neither houſe during the ſeſſion of congreſs ſhall, without the conſent of the other, adjourn for more than three days, nor to any other place than that in which the two houſes ſhall be ſitting.

"*Sect.* 6. The ſenators and repreſentatives ſhall receive a compenſation for their ſervices, to be aſcertained by law, and paid out of the treaſury of the United States. They ſhall in all caſes, except treaſon, felony, and breach of peace, be privileged from arreſt during their attendance at the ſeſſion of their reſpective houſes, and in going to and returning from the ſame; and for any ſpeech or debate in either houſe, they ſhall not be queſtioned in any other place.

"No ſenator or repreſentative ſhall, during the time for which he was elected, be appointed to any civil office under the authority of the United States, which ſhall have been created, or the emoluments whereof ſhall have been increaſed, during ſuch time: and no perſon holding any office under the United States ſhall be a member of either houſe during his continuance in office.

"*Sect.* 7. All bills for raiſing revenue ſhall originate in the houſe of repreſentatives; but the ſenate may propoſe or concur with amendments as on other bills.

"Every bill which ſhall have paſſed the houſe of repreſentatives and the ſenate, ſhall, before it becomes

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America. a law, be preſented to the preſident of the United States; if he approve, he ſhall ſign it, but if not, he ſhall return it with his objections to that houſe in which it ſhall have originated, who ſhall enter the objections at large on their journal, and proceed to re-conſider it. If after ſuch re-conſideration two-thirds of that office ſhall agree to paſs the bill, it ſhall be ſent, together with the objections, to the other houſe, by which it ſhall likewiſe be re-conſidered; and if approved by two-thirds of that houſe, it ſhall become a law. But in all ſuch caſes the votes of both houſes ſhall be determined by yeas and nays; and the names of the perſons voting for and againſt the bill ſhall be entered on the journal of each houſe reſpectively. If any bill ſhall not be returned by the preſident within ten days (Sundays excepted) after it ſhall have been preſented to him, the ſame ſhall be a law, in like manner as if he had ſigned it, unleſs the congreſs, by their adjournment, prevent its return; in which caſe it ſhall not be a law.

"Every order, reſolution, or vote, to which the concurrence of the ſenate and houſe of repreſentatives may be neceſſary, (except on a queſtion of adjournment), ſhall be preſented to the preſident of the United States; and before the ſame ſhall take effect, ſhall be approved by him, or, being diſapproved by him, ſhall be re-paſſed by two-thirds of the ſenate and houſe of repreſentatives; according to the rules and limitations preſcribed in the caſe of a bill.

"*Sect.* 8. The congreſs ſhall have power

"To lay and collect taxes, duties, impoſts, and exciſes, to pay the debts and provide for the common defence and general welfare of the United States; but all duties, impoſts, and exciſes, ſhall be uniform throughout the United States.

"To borrow money on the credit of the United States:

"To regulate commerce with foreign nations, and among the ſeveral ſtates, and with the Indian tribes:

"To eſtabliſh an uniform rule of naturalization, and uniform laws on the ſubject of bankruptcies, throughout the United States:

"To coin money, regulate the value thereof, and of foreign coin, and fix the ſtandard of weights and meaſures:

"To provide for the puniſhment of counterfeiting the ſecurities and current coin of the United States:

"To eſtabliſh poſt offices and poſt roads:

"To promote the progreſs of ſcience and uſeful arts, by ſecuring, for limited times, to authors and inventors, the excluſive right to their reſpective writings and diſcoveries:

"To conſtitute tribunals inferior to the ſupreme courts:

"To define and puniſh piracies and felonies committed on the high ſeas, and offences againſt the law of nations:

"To declare war, grant letters of marque and repriſal, and make rules concerning captures on land and water:

"To raiſe and ſupport armies; but no appropriation of money to that uſe ſhall be for a longer term than two years:

"To provide and maintain a navy:

"To make rules for the government and regulation America. of the land and naval forces:

"To provide for the calling forth the militia to execute the laws of the union, ſuppreſs inſurrections, and repel invaſions:

"To provide for organizing, arming, and diſciplining the militia; and for governing ſuch part of them as may be employed in the ſervice of the United States; reſerving to the ſtates, reſpectively, the appointment of the officers, and the authority of training the militia according to the diſcipline preſcribed by congreſs:

"To exerciſe excluſive legiſlation in all caſes whatſoever over ſuch diſtrict (not exceeding ten miles ſquare) as may, by ceſſion of particular ſtates and the acceptance of congreſs, become the ſeat of government of the United States, and to exerciſe like authority over all places purchaſed by the conſent of the legiſlature of the ſtate in which the ſame ſhall be, for the erection of forts, magazines, arſenals, dockyards and other needful buildings:—and

"To make all laws which ſhall be neceſſary and proper for carrying into execution the foregoing powers, and all other powers veſted by this conſtitution in the government of the United States, or in any department or office thereof.

"*Sect.* 9. The migration or importation of ſuch perſons as any of the ſtates now exiſting ſhall think proper to admit, ſhall not be prohibited by the congreſs prior to the year 1808; but a tax or duty may be impoſed on ſuch importation not exceeding ten dollars for each perſon.

"The privilege of the writ of *habeas corpus* ſhall not be ſuſpended, unleſs when in caſes of rebellion or invaſion the public ſafety may require it.

"No bill of attainder, or *ex poſt facto* law, ſhall be paſſed.

"No capitation, or other direct tax, ſhall be laid, unleſs in proportion to the cenſus or enumeration herein before directed to be taken.

"No tax or duty ſhall be laid on articles exported from any ſtate:—No preference ſhall be given by any regulation of commerce or revenue to the ports of one ſtate over thoſe of another; nor ſhall veſſels bound to or from one ſtate be obliged to enter, clear, or pay duties in another.

"No money ſhall be drawn from the treaſury, but in conſequence of appropriations made by law; and a regular ſtatement and account of the receipts and expenditures of all public money ſhall be publiſhed from time to time.

"No title of nobility ſhall be granted by the United States; and no perſon holding any office of profit or truſt under them, ſhall, without the conſent of the congreſs, accept of any preſent, emolument, office or title of any kind whatever, from any king, prince, or foreign ſtate.

"*Sect.* 10. No ſtate ſhall enter into any treaty, alliance, or confederation; grant letters of marque and repriſal; coin money; emit bills of credit; make any thing but gold and ſilver coin a tender in payment of debts; paſs any bill of attainder, *ex poſt facto* law, or law impairing the obligation of contracts, or grant any title of nobility.

"No

America. No ſtate ſhall, without the conſent of the congreſs, lay any impoſts or duties on imports or exports, except what may be abſolutely neceſſary for executing its inſpection laws; and the net produce of all duties and impoſts laid by any ſtate on imports or exports ſhall be for the uſe of the treaſury of the United States; and all ſuch laws ſhall be ſubject to the reviſion and controul of the congreſs. No ſtate ſhall, without the conſent of congreſs, lay any duty of tonnage, keep troops or ſhips of war in time of peace, enter into any agreement or compact with another ſtate or with a foreign power, or engage in war unleſs actually invaded, or in ſuch imminent danger as will not admit of delay.

Article II.

"*Sect.* 1. The executive power ſhall be veſted in a preſident of the United States of America. He ſhall hold his office during the term of four years, and together with the vice-preſident, choſen for the ſame term, be elected as follows:

"Each ſtate ſhall appoint, in ſuch manner as the legiſlature thereof may direct, a number of electors equal to the whole number of ſenators and repreſentatives to which the ſtates may be entitled in the congreſs; but no ſenator, or repreſentative, or perſon holding an office of truſt or profit under the United States ſhall be appointed an elector.

"The electors ſhall meet in their reſpective ſtates, and vote by ballot, for two perſons, of whom one at leaſt ſhall not be an inhabitant of the ſame ſtate with themſelves. And they ſhall make a liſt of all the perſons voted for, and of the number of votes for each; which liſt they ſhall ſign, and certify, and tranſmit, ſealed, to the ſeat of the government of the United States, directed to the preſident of the ſenate. The preſident of the ſenate ſhall, in the preſence of the ſenate and houſe of repreſentatives, open all the certificates; and all the votes ſhall then be counted. The perſon having the greateſt number of votes, ſhall be the preſident, if ſuch number be a majority of the whole number of electors appointed; and if there be more than one who have ſuch majority, and have an equal number of votes, then the houſe of repreſentatives ſhall immediately chooſe by ballot one of them for preſident; and if no perſon have a majority, then, from the five higheſt in the liſt, the ſaid houſe ſhall, in like manner, chooſe the preſident. But in chooſing the preſident, the votes ſhall be taken by ſtates, the repreſentation from each ſtate having one vote; a quorum for this purpoſe ſhall conſiſt of a number of members from two-thirds of the ſtates, and a majority of all the ſtates ſhall be neceſſary to a choice. In every caſe, after the choice of the preſident, the perſon having the greateſt number of votes of the electors ſhall be the vice-preſident. But if there ſhould remain two or more who have equal votes, the ſenate ſhall chooſe from them by ballot the vice-preſident.

"The congreſs may determine the time of chooſing the electors, and the day on which they ſhall give their votes; which day ſhall be the ſame throughout the United States.

"No perſon, except a natural-born citizen, or a citizen of the United States at the time of the adoption of this conſtitution, ſhall be eligible to the office of preſident; neither ſhall any perſon be eligible to that office who ſhall not have attained to the age of 35 years, and been 14 years a reſident within the United States. America.

"In caſe of the removal of the preſident from office, or of his death, reſignation, or inability to diſcharge the powers and duties of the ſaid office, the ſame ſhall devolve on the vice-preſident, and the congreſs may by law provide for the caſe of removal, death, reſignation, or inability both of the preſident and vice-preſident, declaring what officer ſhall then act as preſident; and ſuch officer ſhall act accordingly until the diſability be removed or a preſident ſhall be elected.

"The preſident ſhall, at ſtated times, receive for his ſervices a compenſation which ſhall neither be increaſed nor diminiſhed during the period for which he ſhall have been elected, and he ſhall not receive within that period any other emolument from the United States, or any of them.

"Before he enter on the execution of his office he ſhall take the following oath or affirmation.

"I do ſolemnly ſwear (or affirm) that I will faithfully execute the office of preſident of the United States, and will, to the beſt of my ability, preſerve, protect, and defend the conſtitution of the United States.

"*Sect.* 2. The preſident ſhall be commander in chief of the army and navy of the United States, and of the militia of the ſeveral ſtates when called into the actual ſervice of the United States; he may require the opinion in writing of the principal officer in each of the executive departments, upon any ſubject relating to the duties of their reſpective offices; and he ſhall have power to grant reprieves and pardons for offences againſt the United States, except in caſes of impeachment.

"He ſhall have power, by and with the advice and conſent of the ſenate, to make treaties, provided two-thirds of the ſenators preſent concur; and he ſhall nominate, and by and with the advice and conſent of the ſenate, ſhall appoint ambaſſadors, other public miniſters, and conſuls, judges of the ſupreme court, and all other officers of the United States, whoſe appointments are not herein otherwiſe provided for, and which ſhall be eſtabliſhed by law. But the congreſs may by law veſt the appointment of ſuch inferior officers as they think proper, in the preſident alone, in the courts of law, or in the heads of departments.

"The preſident ſhall have power to fill up all vacancies that may happen during the receſs of the ſenate, by granting commiſſions, which ſhall expire at the end of their next ſeſſion.

"*Sect.* 3. He ſhall from time to time give to the congreſs information of the ſtate of the union, and recommend to their conſideration ſuch meaſures as he ſhall judge neceſſary and expedient: he may, on extraordinary occaſions, convene both houſes, or either of them; and in caſe of diſagreement between them with reſpect to the time of adjournment, he may adjourn them to ſuch time as he ſhall think proper: he ſhall receive ambaſſadors, and other public miniſters; he ſhall take care that the laws be faithfully executed, and ſhall commiſſion all the officers of the United States.

"*Sect.* 4. The preſident, vice preſident, and all civil

America. vil officers of the United States ſhall be removed from office on impeachment for a conviction of treaſon, bribery, or other high crimes and miſdemeanours.

Article III.

" *Sect.* 1. The judicial power of the United States ſhall be veſted in one ſupreme court, and in ſuch inferior courts as the congreſs ſhall from time to time ordain and eſtabliſh. The judges both of the ſupreme and inferior courts ſhall hold their offices during good behaviour, and ſhall at ſtated times receive for their ſervices, a compenſation which ſhall not be diminiſhed during their continuance in office.

" *Sect.* 2. The judicial power ſhall extend to all caſes in law and equity ariſing under this conſtitution, the laws of the United States, and treaties made or which ſhall be made under their authority; to all caſes affecting ambaſſadors, other public miniſters and conſuls; to all caſes of admiralty and maritime juriſdiction; to controverſies to which the United States ſhall be party; to controverſies between two or more ſtates, between a ſtate and citizens of another ſtate, between citizens of different ſtates, between citizens of the ſame ſtate claiming lands under grants of different ſtates, and between a ſtate, or the citizens thereof, and foreign ſtates, citizens, or ſubjects.

" In all caſes affecting ambaſſadors, other public miniſters and conſuls, and thoſe in which a ſtate ſhall be party, the ſupreme court ſhall have original juriſdiction. In all the other caſes before-mentioned, the ſupreme court ſhall have appellate juriſdiction both as to law and fact, with ſuch exceptions and under ſuch regulations as the congreſs ſhall make.

" The trial of all crimes, except in caſes of impeachment, ſhall be by jury; and ſuch trial ſhall be held in the ſtate where the ſaid crime ſhall have been committed; but when not committed within any ſtate, the trial ſhall be at ſuch place or places as the congreſs may by law have directed.

" *Sect.* 3. Treaſon againſt the United States ſhall conſiſt only in levying war againſt them, or in adhering to their enemies, giving them aid and comfort. No perſon ſhall be convicted of treaſon, unleſs on the teſtimony of two witneſſes to the ſame overt act, or on confeſſion in open court.

" The congreſs ſhall have power to declare the puniſhment of treaſon; but no attainder of treaſon ſhall work corruption of blood or forfeiture, except during the life of the perſon attainted.

Article IV.

" *Sect.* 1. Full faith and credit ſhall be given in each ſtate to the public acts, records, and judicial proceedings of every other ſtate; and the congreſs may by general laws preſcribe the manner in which ſuch acts, records, and proceedings ſhall be proved, and the effect thereof.

" *Sect.* 2. The citizens of each ſtate ſhall be entitled to all the privileges and immunities of citizens in the ſeveral ſtates.

" A perſon charged in any ſtate with treaſon, felony, or other crime, who ſhall flee from juſtice, and be found in another ſtate, ſhall, on demand of the executive authority of the ſtate from which he fled, be delivered up, to be removed to the ſtate having juriſdiction of the crime. America.

" No perſon held to ſervice or labour in one ſtate, under the laws thereof, eſcaping into another, ſhall, in conſequence of any law or regulation therein, be diſcharged from ſuch ſervice or labour, but ſhall be delivered up on claim of the party to whom ſuch ſervice or labour may be due.

" *Sect.* 3. New ſtates may be admitted by the congreſs into this union: but no new ſtate ſhall be formed or erected within the juriſdiction of any other ſtate; nor any ſtate be formed by the junction of two or more ſtates or parts of ſtates, without the conſent of the legiſlatures of the ſtates concerned as well as of the congreſs.

" The congreſs ſhall have power to diſpoſe of and make all needful rules and regulations reſpecting the territory or other property belonging to the United States; and nothing in this conſtitution ſhall be conſtrued ſo as to prejudice any claims of the United States, or of any particular ſtate.

" *Sect.* 4. The United States ſhall guarantee to every ſtate in this union a republican form of government, and ſhall protect each of them againſt invaſion, and on application of the legiſlature or of the executive, (when the legiſlature cannot be convened) againſt domeſtic violence.

Article V.

" The congreſs, whenever two-thirds of both houſes ſhall deem it neceſſary, ſhall propoſe amendments to this conſtitution, or, on the application of the legiſlatures of two-thirds of the ſeveral ſtates, ſhall call a convention for propoſing amendments, which, in either caſe, ſhall be valid to all intents and purpoſes as part of this conſtitution, when ratified by the legiſlatures of three-fourths of the ſeveral ſtates, or by conventions in three-fourths thereof, as the one or the other mode of ratification may be propoſed by the congreſs; provided that no amendment which may be made prior to the year 1808, ſhall in any manner affect the firſt and fourth clauſes in the ninth ſection of the firſt article; and that no ſtate, without its conſent, ſhall be deprived of its equal ſuffrage in the ſenate.

Article VI.

" All debts contracted and engagements entered into, before the adoption of this conſtitution, ſhall be as valid againſt the United States under this conſtitution as under the confederation.

" This conſtitution and the laws of the United States which ſhall be made in purſuance thereof, and all treaties made, or which ſhall be made, under the authority of the United States, ſhall be the ſupreme law of the land; and the judges in every ſtate ſhall be bound thereby, any thing in the conſtitution or laws of any ſtate to the contrary notwithſtanding.

" The ſenators and repreſentatives before-mentioned, and the members of the ſeveral ſtate legiſlatures, and all executive and judicial officers, both of the United States and of the ſeveral ſtates, ſhall be bound by oath or affirmation to ſupport this conſtitution; but no religious teſt ſhall ever be required as a qualification to any office or public truſt under the United States.

Article

America.

ARTICLE VII.

"The ratification of the convention of nine ſtates ſhall be ſufficient for the eſtabliſhment of this conſtitution between the ſtates ſo ratifying the ſame.

"Done in convention, by the unanimous conſent of the ſtates preſent, the 17th day of September, in the year of our Lord 1787, and of the independence of the United States of America the 12th. In witneſs whereof, we have hereunto ſubſcribed our names.

George Waſhington, *preſident and deputy of Virginia.*

Dep. of New Hampſhire,	John Langdon
	Nicholas Gilman
Maſſachuſets,	Nathaniel Gorham
	Rufus King
Connecticut,	William Samuel Johnſon
	Roger Sherman
New York,	Alexander Hamilton
New Jerſey,	William Livingſton
	David Brearly
	William Paterſon
	Jonathan Dayton
Pennſylvania,	Benjamin Franklin
	Thomas Mifflin
	Robert Morris
	George Clymer
	Thomas Fitz-ſimons
	Jared Ingerſoll
	James Wilſon
	Gouverneur Morris
Delaware,	George Read
	Gunning Bedford, junior
	Richard Baſſett
	Jacob Broom
Maryland,	James Mac Henry
	Daniel St Thomas Jenifer
	Daniel Carroll
Virginia,	John Blair
	James Maddiſon, junior
North Carolina,	William Blount
	Richard Dobbſpaight
	Hugh Williamſon
South Carolina,	John Rutledge
	Charles Cotesworth Pinckney
	Charles Pinckney
	Pierce Butler,
Georgia,	William Few
	Abraham Baldwin.

Atteſted, WILLIAM JACKSON, *Secretary.*

To the conſtitutions the following reſolutions were added:

"That the preceding conſtitution be laid before the United States in congreſs aſſembled, and that it is the opinion of the convention, that it ſhould afterwards be ſubmitted to a convention of delegates, choſen in each ſtate, by the people thereof, under the recommendation of its legiſlature, for their aſſent and ratification; and that each convention aſſenting to, and ratifying the ſame, ſhould give notice thereof to the United States in congreſs aſſembled.

"Reſolved, that it is the opinion of this convention, that as ſoon as the conventions of nine ſtates ſhall have ratified this conſtitution, the United States in congreſs aſſembled, ſhall fix a day on which electors ſhould be appointed by the ſtates which ſhall have ratified the ſame, and a day on which the electors ſhould aſſemble to vote for the preſident, and the time and place for commencing proceedings under this conſtitution. That after ſuch publication the electors ſhould be appointed, and the ſenators and repreſentatives elected. That the electors ſhould meet on the day fixed for the election of the preſident, and ſhould tranſmit their votes certified, ſigned, ſealed, and directed, as the conſtitution requires, to the ſecretary of the United States in congreſs aſſembled; tha tthe ſenators and repreſentatives ſhould convene at the time and place aſſigned; that the ſenators ſhould appoint a preſident of the ſenate for the ſole purpoſe of receiving, opening, and counting the votes for preſident; and that after he ſhall be choſen, the congreſs, together with the preſident, ſhould proceed without delay to execute this conſtitution.

The ten following articles were afterwards in 1789, propoſed by congreſs to be added to the conſtitution; and having received the ratification required by article fifth of the above conſtitution, they are to be regarded as forming a part of it. 392 Additions to the conſtitution.

ARTICLE I.

"Congreſs ſhall make no law reſpecting an eſtabliſhment of religion, or prohibiting the free exerciſe thereof; or abridging the freedom of ſpeech, or of the preſs, or the right of people peaceably to aſſemble, and to petition the government for a redreſs of grievances.

ARTICLE II.

"A well regulated militia being neceſſary to the ſecurity of a free ſtate, the right of the people to keep and bear arms ſhall not be infringed.

ARTICLE III.

"No ſoldier ſhall in time of peace be quartered in any houſe, without the conſent of the owner, nor in time of war, but in a manner to be preſcribed by law.

ARTICLE IV.

"The right of the people to be ſecure in their perſons, houſes, papers, and effects, againſt unreaſonable ſearches and ſeizures, ſhall not be violated: and no warrants ſhall iſſue but upon probable cauſe, ſupported by oath or affirmations; and particularly deſcribing the place to be ſearched, and the perſon or things to be ſeized.

ARTICLE V.

"No perſon ſhall be held to anſwer for a capital, or otherwiſe infamous crime, unleſs on a preſentment or indictment of a grand jury, excepting in caſes ariſing in the land or naval forces, or in the militia when in actual ſervice in time of war or public danger; nor ſhall be tried twice for the ſame offence; nor ſhall be compelled in any criminal caſe to be a witneſs againſt himſelf; nor be deprived of life, liberty, or property, without due proceſs of law: nor ſhall private property be taken for public uſe, without juſt compenſation.

ARTICLE VI.

"In all criminal proſecutions, the accuſed party

America. shall enjoy the right to a speedy and public trial by an impartial jury of the state and district wherein the crime shall have been committed, which district shall have been previously ascertained by law; and to be informed of the nature and cause of the accusation; to be confronted with the witnesses against him; to have compulsory process for obtaining witnesses in his favour; and to have the assistance of counsel for his defence.

ARTICLE VII.

"In suits at common law, where the value in controversy shall exceed twenty dollars, the right of trial by jury shall be preserved; and no fact tried by a jury shall be otherwise re-examined in any court of the United States, than according to the rules of the common law.

ARTICLE VIII.

"Excessive bail shall not be required, nor excessive fines imposed, nor cruel and unusual punishments inflicted.

ARTICLE IX.

"The enumeration in the constitution of certain rights, shall not be construed to deny or disparage others retained by the people.

ARTICLE X.

"The powers not delegated to the United States by the constitution, nor prohibited by it to the states, are reserved to the states respectively or to the people."

393 Opposition to the constitution.

The reference of the constitution to the several states, to be adopted or rejected by them, in conventions assembled for that special purpose, occasioned the most violent debates. Pamphlets poured from the press, and the newspapers were daily filled with discussions of the merits and defects of the proposed plan of government. Three states, Delaware, New Jersey, and Georgia, accepted the constitution unanimously; but in the other states the parties were more nearly balanced. The conventions convoked by the state legislatures, went into an analysis of the constitution in detail. This took place more especially in Pennsylvania, New York, Massachusets, and Virginia; and every part of it was made the subject of separate votes. The objections stated against the constitution were chiefly the following: That the convention was only entitled to revise the articles of the original confederation, and had exceeded its powers in framing a new constitution, more especially, as it had declared the acceptance of this constitution by nine states sufficient to make it law: That the constitution ought to have been preceded by a declaration of rights, to secure to the several states their particular constitution. It was alleged, that the proposed senate would possess excessive powers and privileges, by being authorized to make amendments in money bills, by its concurring with the president in the nomination to places, while its members were eligible to every appointment, and by its having the sole trial of impeachments entrusted to it. The prerogative given to the president to pardon criminals convicted of high treason, was represented as dangerous to public liberty; and his power of conferring appointments upon the members of both houses of legislature was accounted a source of corruption. It was said, that the jurisdiction given to the federal courts would prove vexatious, by drawing individuals from distant states to attend to suits instituted before them. The powers given to congress to impose all kinds of taxes, to regulate the election of its members, to maintain a standing army in time of peace, were alleged to be exorbitant. It was said, that the most important of all privileges, the trial by jury, and the liberty of the press, were not secured: and lastly, It was asserted that the function of president being made capable of indefinite continuance in the same hands, might give an ambitious and artful man an influence dangerous to the congress, to individuals, and to the constitution itself.

America.

Some of these objections do not appear very forcible, and others of them have been obviated by the articles afterwards added to the constitution, which have been already noticed; but it is said, that at the period in question they possessed considerable influence, and that a very great majority of the people of the United States was averse to the constitution. So sensible, however, were all parties, of the extreme defectiveness of the existing government, and of the absolute necessity of putting an end to the anarchy in which the country was plunged, that a majority of the different states was prevailed upon to give their votes for its acceptance. In Connecticut, Maryland, and Pennsylvania, a minority voted against it, but it passed without any amendment. In Pennsylvania, where the opposition was strong, the minority withdrew and protested against the constitution. South Carolina, Virginia, New York, and Massachusets, accepted the constitution by a very small majority, but proposed several amendments. New York was on the eve of rejecting the constitution, when intelligence arrived, that it was already accepted by nine of the states; and this circumstance produced an acceptance there also. The convention of New Hampshire separated without coming to a resolution; and, having afterwards assembled, gave its assent, with some proposals for amendment. North Carolina not only proposed amendments, but made them the condition of its acceptance. Some time afterwards, however, it accepted the constitution without reserve. Rhode Island, instead of calling a convention, referred the constitution to the assemblies of the towns, by a majority of which it was rejected; but a convention for the purpose being afterwards called, it accepted the constitution. The following table indicates the periods and the manner in which the constitution was accepted.

States.	Period of accepting the Conſtitution.	Manner of paſſing it
Delaware	Dec. 31. 1787.	Unanimouſly
Pennſylvania	—— 13. ——	For 47 Againſt 23 Maj. 23.
New Jerſey	—— 19. ——	Unanimouſly
Georgia	Jan. 2. 1788.	Ditto
Connecticut	—— 9. ——	For 128 Againſt 40 Maj. 88
Maſſachuſets	Feb. 6. ——	—— 187 —— 168 —— 19
Maryland	April 28. ——	—— 63 —— 12 —— 51
South Carolina	May 23. ——	—— 149 —— 73 —— 76
New Hampſhire	June 21. ——	—— 57 —— 46 —— 11
Virginia	—— 15. ——	—— 89 —— 79 —— 10
New York	July 26. ——	—— 30 —— 25 —— 5
North Carolina	Nov. 27. 1789	—— 193 —— 75 ——118
Rhode Iſland	May 29. 1790.	—— —— —— —— —— 2

394 Executive officers in the American government.

Of the public officers appointed under the conſtitution of the United States, thoſe of preſident and vice-preſident are the moſt conſpicuous and important. In March 1771, the following law was enacted by congreſs for regulating the mode of their election.

395 Preſident and vice-preſident, how elected.

"*Section* 1. The caſe of the election of preſident or vice-preſident of the United States before the uſual period of election, which caſe is herein after provided for, being accepted, the electors for chooſing the preſident and vice-preſident ſhall be named within 34 days immediately preceding the firſt Wedneſday of December 1792, and thenceforth within 34 days immediately preceding the firſt Wedneſday of December, in the fourth year after the laſt election. The ſaid electors ſhall be equal in number to that of the ſenators and repreſentatives in congreſs, of which the ſeveral ſtates ſhall have a right to compoſe their deputation at the time when the preſident and vice-preſident to be choſen ſhall enter into office: provided that, if the new apportioning of repreſentatives in virtue of the new enumeration of the inhabitants, ſhall not take place before the period for chooſing the electors, then the number of electors ſhall be proportioned to the number of ſenators and repreſentatives of the preſent congreſs,

"*Sect.* 2. The electors ſhall aſſemble and vote on the firſt Wedneſday of December in each ſtate, at ſuch place as ſhall be named by the legiſlature of the ſtate; and ſhall draw up and ſign three certificates of their reſpective votes, and ſhall fold up and ſeal the ſame ſeparately, and ſhall indorſe upon the cover of each packet a declaration, that it contains a liſt of the votes of the ſtate for the preſident and vice-preſident; and every elector, or majority of electors, ſhall appoint by ballot the perſon to whom they will entruſt one of the ſaid certificates, to be by him conveyed to the preſident of the ſenate, at the place of reſidence of the government, before the firſt Wedneſday of the January following; and ſhall addreſs another of the ſaid certificates, by the poſt, to the preſident of the ſenate at the place of reſidence of the government; and ſhall tranſmit the third of the ſaid certificates to the judge of the diſtrict in which their aſſembly ſhall be held.

"*Sect.* 3. The executive power, in each ſtate, ſhall cauſe to be drawn up, and properly certified, three liſts of the names of the electors of the ſtate, and ſhall tranſmit the ſame to the electors before the firſt Wedneſday of December; and the electors ſhall add one of the ſaid liſts to each of the before-mentioned liſts of their votes.

"*Sect.* 4. In the caſe of a liſt of the votes of a ſtate not arriving at the place of reſidence of the government in January, the ſecretary of ſtate ſhall deſpatch an expreſs to the judge of the diſtrict of ſuch ſtate in whoſe hands the third certificate ſhall have been depoſited, who ſhall tranſmit it by the ſame meſſenger to the place of reſidence of the government.

"*Sect.* 5. The congreſs ſhall commence its ſittings on the ſecond Wedneſday of February 1793; and thenceforth on the ſecond Wedneſday of the February following each aſſembly of electors; and the certificates, or as many of them as ſhall have arrived, ſhall be opened, the votes counted, and names of the perſons elected to fill the offices of preſident and vice-preſident declared and proclaimed, according to the forms of the conſtitution.

"*Sect.* 6. In caſe of the preſident of the ſenate not being preſent at the place of reſidence of the government on the arrival of perſons charged with the liſts of the votes of the electors, ſuch perſon ſhall deliver the liſts to the ſecretary of ſtate, who ſhall carefully preſerve them, and remit them as ſoon as poſſible to the preſident of the ſenate.

"*Sect.* 7. The perſons appointed by the electors to convey the liſts to the preſident of the ſenate, ſhall receive, at the time of delivering the ſaid liſts, 15d. per mile, for the diſtance, by the high road, from the place of election to the reſidence of the government.

"*Sect.* 8. If any perſon being appointed to convey the votes of the electors to the preſident of the ſenate, and having accepted that truſt, ſhall neglect to diſcharge the ſame, he ſhall incur a penalty of 1000 dollars.

"*Sect.* 9. In the caſe of the removal, death, reſignation, or incapacity to fill his office of the preſident or vice-preſident, the provincial preſident of the ſenate, or, where no ſuch officer has been appointed, the ſpeaker of the houſe of repreſentatives, ſhall fulfil the duties

America. duties of president of the United States, or vice-president, until the president or vice-president shall resume his functions, or a new election shall take place.

"*Sect.* 10. When the offices of president and vice-president shall become vacant at the same time, the secretary of state shall give notice of the same to the executive power of each state; and shall publish the said notice, in one gazette at least of each state, in which it shall be declared, that the electors for the president of the United States shall be appointed or chosen in the several states within the 34 days immediately preceding the first Wednesday of the month of December following, provided a space of two months shall intervene between the date of such notice, and the first Wednesday of the December following; but when the said space of time shall not so intervene, or if the term for which the late president and vice-president were elected does not expire on the third day of March following, then the secretary of state shall declare in such notice that the electors are to be appointed, or chosen, within the 34 days immediately preceding the first Wednesday of December in the following year; and the electors shall be appointed accordingly, and shall proceed as is provided in this act.

"*Sect.* 11. The only evidence that shall be required of the refusal to accept the office of president or vice-president, or resignation of either of said offices, shall be a declaration in writing to that effect, signed by the person refusing to accept or resigning such office, which shall be transmitted to, and deposited in the office of the secretary of state.

Sect. 12. The term for which the president and vice-president shall be chosen shall be four years: commencing, in all cases, on the 4th of March following the day of the election.

By this law, as well as by the constitution, the power of declaring the manner of nominating the electors who are to chuse the president and vice-president, was left to the legislatures of the several states; the result of which was that a uniform mode was not adopted. In some of the states the people were left to nominate the electors in the same manner as they voted for other representatives. In other states, that power was confined to the legislatures themselves. The following is a statement of the different modes which have been established in all the states, including the three new states of Vermont, Kentucky, and Tenessee.

States in which the electors for the president and vice-president of the United States are named by the people.	*States in which the electors for the president and vice-president of the United States are named by the legislature.*
Massachusets	Vermont
Pennsylvania	New Hampshire
Virginia	Connecticut
Tenessee	Rhode Island
Kentucky	New York
South Carolina	Delaware
Georgia	New Jersey
	Maryland
	North Carolina

In the executive government of the United States there are three departments; the department of state, the department of finances, and that of war: a secretary is at the head of each of these, who acts under the authority of the president. The secretary of state is keeper of the seals of the union. It belongs to his office to countersign the laws, and to promulgate them. He has the custody of all public papers, but his principal employment is to transact affairs with foreign powers. 396 Secretary of state.

At the head of the finances is a secretary of the treasury. This part of the public business was attended with many difficulties at the period when the constitution was formed, and for some years thereafter. The new congress, at the close of its first session, in September 1789, ordered the secretary of the treasury of the union, Mr Hamilton, to prepare a plan for the restoration of public credit. This duty was performed in January 1790, and after long debates, the congress, on the 4th of August of that year, passed the plan into a law. By this law, the debt due to foreign nations, as well as to the creditors at home, was funded, together with a long arrear of interest, and even interest upon interest. The debt due to foreign nations amounted to 11,908,188 dollars, and the domestic debt to 40,905,485 dollars, making together 52,813,673 dollars. The president of the United States was authorized to borrow 12,000,000 of dollars to pay the foreign debt. Another loan was made to extinguish the domestic debt, and in payment of this loan certificates of interest due, (one of the kinds of public paper then current) were received and funded at three per cent. The capital of the debt, including the rest of the paper money then in circulation, was funded at 6 per cent. interest, with a provision that for a third of the debt thus funded no interest should be paid till the year 1800. This part of the debt therefore received the name of *deferred stock*. The deferred stock was appointed to be redeemed in the proportion of eight per cent. per annum. For the rest of the debt two other funds were created, one of three per cent. and one of six per cent.—By this law the whole debts due by the several states to the union, and for which the credit of congress stood pledged to the public creditors, were adopted as the debt of the union. But as the debts due by the several states were very unequal, this part of the plan met with much opposition. It is understood, however, to have been at last carried, in consequence of a kind of compromise between the northern and southern states. The northern states, including New York, were the principal debtors. Massachusets alone owed 6,000,000 of dollars. The northern states therefore were deeply interested, that the public debt should be adopted by the whole union. The southern states, on the contrary, were all, with the exception of South Carolina, creditors of the union. But it was their favourite project to draw the seat of the federal government nearer to them. Virginia was more eager in the prosecution of this object than the rest, and Virginia was the principal public creditor. Accordingly, the deputies of the northern states made a compromise with the southern states, agreeing to vote that the seat of the federal government should be placed on the river Potowmack, on condition of the others voting for the consolidation of the debts. The state of Pennsylvania, though among the debtors, opposed this plan; but its opposition was got over by an agreement, that the seat of the federal Treasury.

America. government ſhould continue at Philadelphia for ten years. Thus the plan for conſolidating the debts paſſed, and at the ſame time a law was enacted, authorizing the general government to accept, from the ſtate or ſtates to which it might belong, of a territory for the permanent ſeat of its reſidence, not exceeding ten miles ſquare, at the confluence of the Potowmack and the Eaſtern Branch; authorizing, at the ſame time, the preſident of the United States to appoint commiſſioners to ſurvey the territory, and to prepare, againſt the firſt Monday of December 1800, the buildings neceſſary for transferring the congreſs and whole offices of the federal government thither. In honour of the preſident of the union, who had ſo long been the commander in chief of the armies of the ſtates, the new city was ordained to be called Waſhington.

The congreſs afterwards erected an office for the reduction of national debt; but a regular ſyſtem of taxation being now eſtabliſhed in the United States, it is probable that the government, finding itſelf rather ſtrengthened than weakened by the exiſtence of a public debt, or what is called the funding ſyſtem, has not been very anxious to accompliſh the payment of that debt, and accordingly it has rather increaſed than diminiſhed. The debt of the United States, which in 1790 amounted to 72,613,254 dollars, amounted in 1796 to 78,697,410 dollars.

398 National bank. A part of the general ſyſtem of finance, propoſed by Mr Hamilton, conſiſted of the eſtabliſhment of a national bank, in imitation of the bank of England, which was accordingly incorporated in 1791, with a capital of 10,000,000 of dollars. Of theſe 2,000,000 were ſubſcribed by the United States, but are not to be made good at the period impoſed on other ſubſcribers. The remaining 8,000,000 were furniſhed by individuals; one fourth in ſpecie, and the reſt in certificates of public debt: ſo that, in this way, paper currency to the amount of 6,000,000 of dollars at once diſappeared. This bank is authorized, by its charter, to eſtabliſh aſſiſtant or branch banks, in ſuch parts of the United States as it may deem expedient; and accordingly, beſides the principal bank at Philadelphia, it ſoon eſtabliſhed four branches, at New York, Boſton, Baltimore, and Charleſtown. Its dividends are eight per cent. and its ſhares have riſen from a fourth to a fifth above the original value.

399 Army. Beſides the ordinary militia, the United States have a ſmall permanent military eſtabliſhment regulated by law. It is compoſed of a body of artillery and engineers, two companies of light dragoons, and four regiments of infantry. The corps of artillery and engineers, conſiſts of 764 men divided into four battalions, and each battalion into four companies: a captain, two lieutenants, and two cadets, are allowed to each company. Each battalion has a major; and the whole corps is commanded by an adjutant-general, who has a lieutenant colonel under him. Each company of dragoons conſiſts of a captain, two lieutenants, and a cornet; 52 privates, and 11 ſerjeants, corporals, ſadlers, farriers, and trumpeters. The ſtaff of each regiment of infantry conſiſts of a lieutenant-colonel, two majors, an adjutant, a paymaſter, quartermaſter, ſurgeon, and two aſſiſtant ſurgeons. Each company conſiſts of a captain, lieutenant, and an enſign; with 62 ſerjeants, corporals, ſoldiers, and muſicians. This little army, therefore, conſiſts of 2774 ſoldiers, ſerjeants, muſicians, dragoons, and artillery men. The ſtaff of the whole conſiſts of a brigadier-general, a major of brigade, and an inſpector, a judge advocate, a quartermaſter, and a paymaſter general. Their pay would in Europe be accounted exorbitant. The privates receive four dollars a-day. In addition to this, each individual of every rank receives what is called a *ration*, conſiſting of a pound of beef, and a pound of bread, with a ſmall quantity of diſtilled ſpirits, and ſalt, vinegar, ſoap, and candles. A captain of infantry receives 40 dollars a-day and three rations, and the other officers in proportion. America.

The navy is alſo a branch of the war department; but as yet it conſiſts only of a few veſſels, though there is no doubt that, in caſe of neceſſity, the United States would ſoon render themſelves formidable as a maritime power. They poſſeſs in profuſion all the materials neceſſary for ſhip-building. They have abundance of naval architects, and great numbers of experienced ſeamen in proportion to their population.

400 Law officers. For the adminiſtration of juſtice, an attorney general of the United States, is by law attached to the executive government. His functions are to proſecute, in the ſupreme court of the ſtates, all ſuits in which the government of the union is intereſted, and to aſſiſt the preſident with his opinion on queſtions of law. He is permitted, as in Great Britain, to purſue his profeſſion in the affairs of individuals. In the United States, juſtice is adminiſtered by diſtrict courts, circuit courts, and a ſupreme court. Theſe poſſeſs excluſive juriſdiction, in all ſuits that affect the intereſts of the union. The courts of diſtrict are held four times a-year in each ſtate, by a judge appointed by the federal government, and reſiding in the ſtate. They have juriſdiction, in all ſuits that affect the intereſt of the union, where the penalty does not exceed 100 dollars, or a ſlight corporal puniſhment. They judge alſo in civil queſtions, in which the union or foreigners are intereſted to the amount of 100 dollars; and unleſs in admiralty caſes, the queſtion is tried by a jury.

The circuit courts are held by a judge of the ſupreme court, twice a year in each ſtate, along with the judges of the diſtrict. They have an excluſive cognizance of all crimes againſt the union, and they are courts of appeal from the diſtrict courts. They have cognizance, along with the courts of the different ſtates, of all civil cauſes, not exceeding 500 dollars in value, or where a foreigner is party, or the diſpute is between citizens of different ſtates.

The ſupreme court of the union conſiſts of a chief juſtice, and five judges. It ſits twice a year at the ſeat of government. It is a court of appeal from the circuit courts, and the tribunals of the ſeveral ſtates. It has excluſive juriſdiction in all civil cauſes, where one of the ſtates is a party, unleſs the adverſe party be a citizen of the ſame ſtate, and over all ſuits againſt foreign ambaſſadors or envoys, and their domeſtics, according to the law of nations. It may alſo try, but not excluſively, cauſes in which an ambaſſador, conſul, or other foreign miniſter, is intereſted as proſecutor.

On account of the diſtance of the ſtates of Kentucky and Teneſſee, and the province of Maine, their courts of diſtrict exerciſe the juriſdiction of courts of circuit, except in caſes of appeal, which are carried before the ſupreme federal court. Juries ſerving in the federal

America. federal courts, are chosen according to the forms observed in the states where these courts happen to be held.

Crimes or offences of which the federal tribunals take cognizance, are treasons, rebellions, refusals to pay imposts enjoined by the union, smuggling, frauds by officers of the revenue in matters of revenue, and in short every offence committed against laws passed by the congress. In addition to these, the federal courts take cognizance of all offences committed within what is accounted not the territory of any particular state, but of the union at large, such as, the open seas, or forts or arsenals belonging to the union, and also the precincts of the federal city of Washington, which is considered as the common property of the American nation.

In civil matters, both in the courts of the union, and of the particular states, the common law of England is considered as the law of America, where no special enactments exist to the contrary. The administration of justice, however, is understood to be no less embarrassed by intricacies and delays in North America, than it is under some of the oldest governments in Europe. A reform in this respect will not readily be expected, when it is considered, that more than one half of the legislature of the union, as well as of the legislatures of the different states, is always composed of lawyers.

401 The mint. In April 1792, the congress ordered the establishment for the United States, of a public mint, by a law, which regulates the division, the value, and the standard of their money. The division and value of these moneys, are as follows.

Gold Coin.

The *Eagle*, value ten dollars.
The *Half-Eagle*, value five dollars.
The *Quarter-Eagle*, value two dollars and a half.

Silver Coin.

The *Dollar*, value a hundred cents.
The *Half-Dollar*, value fifty cents.
The *Quarter-Dollar*, value twenty-five cents.
The *Tenth of a Dollar*, value twelve cents and a half.
The *Half-Tenth*, value six cents and a quarter.

Copper Coin.

The *Cent*, value the hundredth part of a dollar.
The *Half-Cent*, value the two hundredth part of a dollar.

The weight of these is as follows. The eagle ought to contain 247½ grains of pure gold, or 270 grains of standard gold, which is thus regulated; 11 parts of pure gold in 12 1/12 of alloy, of which one half ought to be of silver.

The half-eagle ought to contain 123¾ grains of pure gold, or 135 grains of alloy gold.

The quarter eagle ought to contain 61 grains of pure gold, or 67½ grains of alloy gold.

The dollar ought to contain 371¼ grains of pure silver, or 416 grains of alloy silver.

The standard of silver is 1485 parts of pure silver, and 179 parts of alloy which is of pure copper.

The half-dollar ought to contain 182⅝ grains of pure silver, or 280 grains of standard silver.

A quarter-dollar ought to contain 92 7/8 grains of pure silver, or 104 grains of standard silver. America.

The tenth of a dollar ought to contain 37⅛ grains of pure silver; or 52 grains of standard silver.

The half-tenth ought to contain 18 9/16 grains of pure silver, or 36 grains of standard silver.

The cent ought to contain 11 pennyweights of copper.

The half-cent ought to contain five and a half.

The gold and silver coins ought, according to law, to bear on one side an emblematical figure of liberty, and upon the other, the eagle of the United States, with the words "United States."

The copper coins, instead of the American eagle, bear an inscription denominating their value.

The proportional value between gold and silver, when coined, to the coin of the United States, is determined by comparing one pound of the one to fifteen of the other; that is to say, one pound of coined gold is equal to fifteen pounds of coined silver.

All the countries of the United States are required to make use of these coins.

The Spanish dollar is the only piece of foreign coin which is current in the United States as money: all others, which had received a valuation by the law, are only received by weight since 1795. It does not appear, however, that the United States have hitherto made much use of their mint, at least for the coinage of the more valuable metals.

402 History continued. The convulsions of nations and the calamities and the crimes of mankind, always form the most interesting subject of history; and happy is that people concerning whom the historian finds little to relate. From the period of the acceptance of their constitution, the American states have, in a great degree, enjoyed that fortunate situation. On the 13th of September 1788, the old congress having received the ratification of the constitution from eleven states, declared it to be in force, and appointed the first Wednesday of the following January for choosing the electors, who were to assemble on the first Wednesday in February following, to elect the president and vice-president. The new congress was also appointed to meet on the first Wednesday of March following at New York. Accordingly on the first Wednesday of February 1789, George Washington, who had been the commander in chief of the armies of the United States, and president of the convention of Philadelphia that framed the constitution, was elected president, and John Adams, who had seconded Mr Jefferson in proposing the original declaration of American independence, was at the same time elected vice-president. The popularity of the president was deservedly very great; and, as all parties concurred in supporting the new constitution, much unanimity prevailed in the public councils. By degrees, however, it appeared, that two parties continued to exist, possessing the same radical principles as formerly. The party most attached to the principles that leaned towards monarchy, or rather towards aristocracy, concurred steadily in giving support to the new authorities in all their exertions as soon as they were constituted, adopting for themselves the appellation of *federalists*, which had by that time become popular. On the other hand, the more strict and zealous

403 Washington president.

404 Political factions.

America. ous republicans, who had originally been called *federaliſts*, and who had only oppoſed the conſtitution, becauſe, in their opinion, it did not ſufficiently incorporate the whole ſtates into one nation, now began to receive the appellation of *antifederaliſts*: becauſe, from their temper and character, they frequently oppoſed the meaſures of the new federal government. In this way the names of the parties were changed, while their principles remained the ſame. It is not believed, however, that in the United States there exiſts any party that wiſhes to diſſolve the confederation; the word antifederaliſts being only uſed to expreſs the democratic or moſt zealous republican party, whereas the appellation of federaliſt is applied to thoſe of a more ariſtocratical character and tendency, who array themſelves moſt ſteadily on the ſide of eſtabliſhed authority, in oppoſition to every kind of innovation. In the earlieſt period of the conſtitution, the only extraordinary effort that we find to have been made by either of theſe parties, conſiſted of a propoſal made in the ſenate of congreſs, in which the ariſtocratical party, now called *federaliſts*, were very numerous, to give the titles of *illuſtrious highneſs* to the preſident of the United States, of *right honourable* to the members of the ſenate, and *honourable* to the members of the houſe of repreſentatives; but this project was abandoned by the ſenate itſelf, as the public opinion was found to be averſe to it, and as the houſe of repreſentatives was diſpoſed to impoſe a negative upon it. When the ſyſtem of finance, of which we have already taken notice, and which ſtill exiſts, was propoſed, it was vehemently combated by the oppoſition or the antifederaliſt party, on account of the tendency, which, in their opinion, it muſt have to introduce a funding ſyſtem, and by means of it an extravagant and expenſive government, in conſequence of the facility with which that ſyſtem enables miniſters to negociate loans, and thereby rather to increaſe than diminiſh their own power by the dependence upon government which theſe loans produce. The ſame reaſons which induced the antifederaliſt party to oppoſe the new ſyſtem of finance, or the introduction of a funding ſyſtem, recommended it to the ſupport of the federaliſts, who, by means of it, expected to increaſe the ſtrength and influence of government. This laſt motive probably derived greater weight from the perſonal intereſts and prejudices of the individuals who uſually joined the federaliſt or ariſtocratical party.

405 Titles propoſed.

406 Character of the parties.

It is to be obſerved, that, in North America as in Europe, the political opinions of men are, in a great meaſure, formed by their ſituations. At the ſame time, local ſituation produces in America an effect preciſely the reverſe of what it does among the Europeans. In Europe the proprietors of land conſtitute the ariſtocracy of the country in which they live, and are the pillars of the government; whereas the inhabitants of towns, from being crowded into a narrow ſpace, and from their want of perſonal diſtinction, have a tendency to aſſume a more levelling and turbulent character. But, in America, unleſs when land is bought in large quantities to be ſpeedily diſpoſed of as an object of commercial ſpeculation, it is uſually held in property by the cultivators of it, who labour upon their own farms, and conſtitute a body of yeomanry in eaſy circumſtances, but not poſſeſſed of great wealth. Hence, in all political queſtions they are led to adopt equalizing notions, and a jealouſy of the conduct of thoſe entruſted with power. In the towns, on the contrary, a great diverſity of rank exiſts. By means of an extenſive commerce large fortunes are made, the owners of which live in a ſtile of great ſplendour, and along with the members of the learned profeſſions conſtitute the ariſtocracy of America. The commercial men being alſo intimately connected with Great Britain, are naturally led to approve of the inſtitutions that exiſt in it, and to favour her cauſe in every quarrel with European nations. America.

It was not till the ſecond period of the French revolution, or the fall of monarchy in that country, that the American parties became in any great degree exaſperated againſt each other. That extraordinary event, by which Europe was convulſed from its centre to its extremities, and by which all its nations were rouſed to arms, carried agitation and diſcord even beyond the ſhores of the Atlantic. The people of the American ſtates belonging to the race of Europe, and having ſo recently been an object of lively intereſt and of hoſtility between different ſtates, could not fail to have their minds occupied by the new events and ſpeculations which at that time engaged the attention of all ranks of men. The French had been the allies of America. Their troops had fought for the independence of that country, and Fayette and other names that were diſtinguiſhed in the early periods of the French revolution, were well known, and enjoyed much perſonal popularity among the Americans. It is not wonderful, therefore, that the antifederaliſt party in America regarded with favour the early progreſs of the French revolution, eſpecially as they conſidered the French ſoldiers as now engaged on the ſide of principles which they had learned in the ſchool of America. They contemplated with exultation the progreſs of republicaniſm in France, and fancied they beheld in it a confirmation of their own ſentiments, and the means of preventing their own government from acquiring an ariſtocratical or a monarchical tendency. When the governing party in France diſhonoured themſelves and human nature by the exceſs of their barbarity and of their crimes under Robeſpierre, the antifederaliſts in America, being men of a better character, could not fail to regard the conduct of the European revolutioniſts with much horror. Still, however, they flattered themſelves that the diſorders of France were only temporary; and they vainly hoped that the ſpirit of freedom would in that country ſoon be rendered conſiſtent with the exiſtence of public order.

407 Antifederaliſts fond of the French political opinions.

On the other hand, the federaliſt party in America, whoſe objects were to ſtrengthen the government of the union, to increaſe the influence of the executive power, and to carry the conſtitution as far as poſſible towards ariſtocracy and monarchy, naturally conſidered the example and influence of the Engliſh government as a barrier againſt the ſyſtem of French republicaniſm. As many of the members of this party were ſtrongly bound to Great Britain by the ties of commercial intereſt, they ſoon became extremely eager to detach the United States from France, and to connect them with Britain. This party derived a great acceſſion of ſtrength from the crimes, which nobody pretended to juſtify, of the rulers of the French republic.

408 The federaliſts attached to Britain.

They

America. They derived ſtill greater ſtrength from the diſorganizing ſyſtem with regard to foreign nations which the French adopted, and which they extended even to the republican ſtates of America. Their ambaſſador, M. Genet, and their conſuls at different ports, inſtituted political clubs in the towns and villages, and attempted to introduce everywhere the Jacobin practice of affiliation or fraternization. The ambaſſador alſo attempting to force the United States into a war with Great Britain, quarrelled openly with the preſident, and attempted, by the publication of official notes addreſſed to him, to excite diſcontents, and to introduce a diſtinction between the government and the people of the country. He was recalled by the French government, but not till his conduct had excited the diſapprobation of all parties in America. It would appear however, that for a time the American government was diſpoſed to regard the French republic with favour. Payment was readily made to the republic of the debt incurred by the United States to the late French monarch; and as France ſuffered great diſtreſs from a ſcarcity of proviſions, the money was laid out in the purchaſe of grain and flour, which was conveyed from America to France in a fleet of 160 ſhips. It was in defence of this fleet that the French fought the naval engagement with Lord Howe on the 1ſt of June 1794, in which their ſhips of war were defeated; but they were ſucceſsful in conveying the tranſports loaded with grain into Breſt harbour. But the American government ſoon found itſelf much embarraſſed with regard to the part which it ought to act towards the contending powers of Europe. George Waſhington was ſtill at the head of affairs, having been re-elected

479 Conduct of the preſident. preſident in December 1792, though not altogether unanimouſly, as in the former inſtance. This prudent ſtateſman ſaw that the intereſt of his riſing country required that ſhe ſhould remain diſengaged from the deſtructive quarrels of the European nations. The reſtleſs ſpirit of the French, however, on the one hand, and the eagerneſs of Great Britain to force an univerſal combination againſt them on the other, rendered the preſervation of neutrality no eaſy taſk. He ſaw a confederacy of all Europe formed againſt France; and he could ſcarcely avoid ſuppoſing that it muſt be ſucceſsful againſt an anarchy ſtained with crimes and blood, aſſailed by choice troops, and having nothing to oppoſe this force but new ſoldiers and inexperienced generals, ſupported by a treaſury furniſhed only with a paper currency, which muſt ſpeedily be diſcredited. At the ſame time, the American commerce was greatly haraſſed by Great Britain, whoſe ſhips, with a view to diſtreſs France, ſeized all veſſels going thither with proviſions, which formed the chief article of American export. The debates which occurred in the houſe of repreſentatives in congreſs in conſequence of this ſtate of affairs were extremely violent; and the people without doors were greatly agitated throughout the whole extent of the United States. The general wiſh was, to preſerve peace and neutrality; but the complaints againſt Britain were very loud, eſpecially as the extenſive traders who were moſt attached to the Britiſh intereſts were the chief ſufferers by the interruption of commerce. The antifederaliſts on this occaſion became ſtill more attached to France, the contagion of whoſe anarchy among a virtuous people they declared they did not fear. If ſatisfaction could not be obtained from Britain, they propoſed a ſequeſtration of Britiſh property in America, an interruption of all commerce with Britain; and they imagined, that by arming American privateers, prohibiting the conveyance of proviſions to the Britiſh iſlands, and laying on Canadas, they would effect more certain means of injuring Britain, if ſhe was reſolved upon war, than any ſhe had with which to make repriſals upon the ſtates. The federaliſts, on the other hand, were eager to avoid all connexion with France, and propoſed the mildeſt meaſures of remonſtrance and negotiation with regard to England, depreciating the idea of entering into a conteſt with her; and the preſident appears at length to have adopted the reſolution of going fully into the meaſures of this laſt party. He diſmiſſed Thomas Jefferſon from the office of ſecretary of ſtate, he being of that party that had always avowed an attachment to pure republicaniſm, and that was at preſent moſt hoſtile to Great Britain. He at the ſame time reſolved to ſend Mr Jay to England for the purpoſe of negotiating with the Britiſh government. This laſt gentleman being known to be decidedly attached to the federaliſt party, indicated to the public in very clear terms the meaſures which the government had reſolved to adopt.

410 Rebellion at Pittſburg. About this time ſome internal diſorders broke out in one part of America; and, as political factions render every event ſubſervient to their mutual hatred, the federaliſts accuſed their adverſaries, though evidently without reaſon, of being the contrivers and authors of the diſturbance, the hiſtory of which was this:—Among the different objects of taxation which preſented themſelves to congreſs during the ſeſſion of 1790, none had appeared more proper than the diſtilleries throughout the United States. As a revenue from this ſource could only be collected by an exciſe, this form was adopted: The duty was light, and the object unexceptionable. But at all times this form of collecting a revenue has been unacceptable to the people in general. By fixing the duty not on the raw material, but on the manufactured commodity, the capital of the trader is leſs deeply involved, and the price is commonly rendered leſs burdenſome to the conſumer; but from the right which, under this form of taxation, it is neceſſary to confer upon the revenue officers, of entering into private buildings, and of interfering with the operations there going on, it has always been ſubmitted to with reluctance at its firſt introduction. This tax, however, was peaceably ſubmitted to throughout the whole American continent, excepting in one quarter, that is to ſay, in the four weſtern counties of Pennſylvania beyond the Alleghany mountains, near the junction of the three great rivers Alleghany, Yohogany, and Monongahela, whoſe confluence at Fort Pitt forms the river Ohio. This diſtrict had been ſettled for a conſiderable time, and is tolerably populous. The inhabitants at firſt refuſed to pay the tax, but they were not altogether unanimous in this reſpect; and government for ſome time avoided to preſs the matter by proſecutions, in the hopes that by degrees the authority of law would be eſtabliſhed without trouble or alarm. Petitions in the mean time were tranſmitted to congreſs againſt the tax, and ſome modifications of it had taken place; ſo that the government at laſt endeavour-

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America. ed generally to put it in force. The marſhal was ordered to proceed by legal proceſs againſt all rioters and delinquent diſtillers who ſhould be found to reſiſt or evade the tax; but no ſooner was he underſtood to be engaged in this duty than the vengeance of armed men was aimed at his perſon, and the perſon and property of the inſpector of the revenue. They fired on the marſhal, arreſted him, and detained him ſome time as a priſoner. The houſe and papers of the inſpector of the revenue were burnt; and both theſe officers were obliged to fly to Philadelphia. In a few days thereafter, in the month of Auguſt 1794, a general meeting was held at Pitſburg, conſiſting of ſix or ſeven thouſand men in arms. A ſtrong remonſtrance was drawn up, to be preſented to congreſs. Committees were appointed to correſpond with the counties of Waſhington, Fayette, and Alleghany; and a reſolution was entered into, againſt having any intercourſe or dealings with any man who ſhould accept of any office for the collection of the duty.

The American government on this emergency acted with much prudence. Commiſſioners were deſpatched to confer with the leaders of the oppoſition in the diſaffected counties, but the conference was unfortunately without effect. A committee of 60 perſons was elected to confer with the commiſſioners, but of theſe only a ſmall number voted in favour of the conciliatory propoſition. The others threatened, that if the tax was not repealed, the people of the weſtern counties would ſeparate from the American union, and place themſelves under the protection of Great Britain. The conduct of the populace was ſtill more outrageous. They ſurrounded the houſe where the commiſſioners reſided, broke the windows, and groſsly inſulted them; ſo that they were under the neceſſity of departing without effecting an accommodation.

Nothing now remained but to repeal the tax, or to reduce the refractory counties by force. The former was neither judged prudent nor ſafe; and as a trifling force might have been ineffectual, and therefore extremely pernicious, by encouraging and extending the inſurrection, the militia of all the adjacent ſtates were embodied, and different detachments, amounting in all to 15,000 men, were ordered to rendezvous at Carliſle, the principal town of Cumberland county. Governor Mifflin, formerly general, marched thither in the middle of September, at the head of 6000 volunteers, who, for the honour of their country, engaged on this occaſion to ſupport the laws of the federal government. In the beginning of October, the preſident joined the army at Carliſle, of which Governor Lee of Virginia was commander in chief; and Governor Mifflin was ſecond in command. From Carliſle the army proceeded immediately, amounting in all to 15,000 men in two diviſions; and the reſult was, that the inſurgents, after a variety of conſultations by repreſentative committees, came to a reſolution to diſband, and ſubmit to the law; and their leaders diſappeared. On the 25th of October, a conſiderable meeting was held at Pitſburg, of the inhabitants of the weſtern counties, in which they entered into a ſolemn engagement to ſupport order and obedience to the laws of the republic by every means in their power. A ſmall force was, however, ſtationed in the counties in which the diſturbance had taken place. A conſiderable number of the inſurgents who had been made priſoners were tried, and convicted of high treaſon; but they were all afterwards pardoned. Thus did this rebellion, which at one time exhibited a formidable aſpect, terminate without bloodſhed, and almoſt without violence or damage to the public. America.

411 War with the Indians.

During the ſame ſummer, a part of the weſtern territory of the United States was ravaged by a deſperate incurſion of the Indians. To repel this attack, Major General Wayne was deſpatched with a moderate force early in the ſummer, and about the middle of Auguſt he penetrated to the Miami river, where the Britiſh had lately re-occupied a fort within the territory which, according to the treaty of 1783, undoubtedly belonged to the American ſtates. Along with the Indians General Wayne found a number of Canadian ſettlers encamped without the fort; and he aſſerted in his correſpondence, that Colonel M'Hee, the Britiſh Indian agent, was the principal inſtigator of the war between the ſavages and the United States. The ſavages, with a few white auxiliaries, amounted to 2000 men, while General Wayne had only 900; but he reſolved not to retreat, and, after a laſt overture for peace, which was rejected, he advanced to the attack on the 20th of Auguſt. His advanced guard was at firſt thrown into diſorder by a ſevere fire from the Indians, but the ſecond line was immediately brought forward, while the firſt line was directed to rouſe the Indians from their coverts by the bayonet; and the cavalry were directed to turn their flank. The effect of the charge of the infantry, however, was, that the ſavages were routed and immediately diſperſed, the battle terminating under the guns of the Britiſh garriſon, commanded by Major Campbell. This laſt gentleman and General Wayne now reciprocally accuſed each other as guilty of hoſtility in time of peace. The one complained that a fort was occupied within the American territory; and the other, that ſo near an approach was made to a garriſon poſſeſſed by the troops of his Britannic majeſty. It was agreed, however, that the point ſhould be left to be diſcuſſed by the ambaſſadors of their different nations; and General Wayne retired. Theſe occurrences excited ſtrong apprehenſions in the American government that the Britiſh miniſtry ſeriouſly meditated hoſtilities againſt the United States.

412 Jay's treaty.

Theſe apprehenſions, however, were ſoon done away by the treaty which Mr Jay concluded with Great Britain in the end of the year 1794. By this treaty the Britiſh government agreed to indemnify the American merchants for the illegal ſeizure of their ſhips and property that had taken place during the war; the forts within the American territory which had been occupied by the Britiſh, and which had never been evacuated, were agreed to be given up, and the boundary line to be clearly aſcertained. On the other hand, the American government conſented, that French property on board American veſſels might be lawfully ſeized, and that no privateers belonging to a nation at war with either party ſhould be allowed to bring their prizes into the ports of the other, unleſs forced by ſtreſs of weather; and at all events, that they ſhould not be allowed to ſell their prizes there. Various articles favourable to the American commerce were at the ſame time ſtipulated in the treaty.

When this treaty was laid before the legiſlature of the

America. the United States, it occaſioned the moſt violent debates. The treaty, however, approved of by the ſenate, was all that was neceſſary, according to the conſtitution, to render it binding. The houſe of repreſentatives at firſt refuſed to concur in the arrangements neceſſary for carrying it into effect, though they at laſt agreed to depart from their oppoſition, from the dread of involving their country in a war with England, and from the great reſpect which the country at large entertained for the judgment of the preſident.

413 Diſputes with France.

In the mean time, this treaty, along with other events, had nearly involved the United States in what was undoubtedly at that time leſs formidable; a war with France. The French had repeatedly made remonſtrances to the American government againſt the conduct of the Britiſh, in ſeizing American veſſels, even in their own rivers and bays, when they found either French perſons or French property, without any reſiſtance being made on the part of the American ſtates. When the above treaty, authorizing ſuch ſeizures, in a manner ſo hoſtile to the intereſts of France, and even to the ſpirit of neutrality which it was the intereſt of the American government to obſerve, came to be publicly known, the French at firſt entertained hopes that it would not be ſanctioned by the American legiſlature. Their indignation was greatly roufed when they underſtood that a legalized preference was ſhown to the Engliſh intereſt, by allowing them to ſeize French property in American veſſels; while France ſtood engaged by treaty, not to ſeize American property in Engliſh veſſels, or in the veſſels of any other nation with which France might happen to be at war. Still, however, the French government regarded leſs the treaty itſelf, than the ſpirit from which it roſe, of a greater attachment to Great Britain than to France. Their indignation in this reſpect was increaſed, by an intercepted letter from the preſident of the United States addreſſed to Mr Morris, who had lately been the American ambaſſador in France, and who was then the private agent of the American government in London. This letter, dated at Philadelphia, December 2. 1795, was a detailed anſwer to various letters of Mr Morris. The preſident complained highly of the haughty conduct of the Engliſh adminiſtration, and of the arbitrary meaſures which they were continuing to purſue with reſpect to American navigation. He requeſted Mr Morris to repreſent to the miniſter not only the injuſtice, but the impolicy of this conduct; particularly at a moment when it was ſo much the intereſt of England to conciliate the minds of the inhabitants of the United States to the acceptance of the treaty. He detailed the efforts he had made, and the difficulties he had encountered to overcome the wayward diſpoſition of his countrymen towards French politics, the abettors of which were the chief opponents of the treaty in queſtion; which, however, he ſaid, had the approbation and ſanction of the greater and more reſpectable part of the community. His only object, he obſerved, was peace, which he was moſt anxious to preſerve; and if America was happy enough to keep herſelf out of European quarrels, ſhe might, from the increaſe of her trade, vie in 20 years with the moſt formidable powers of Europe.

This treaty, [illegible] the ſtrength of the Britiſh intereſt, was [illegible] in the power of France, [illegible] conſidered [illegible] the conſent of the people [illegible] the American government [illegible] the [illegible] people. The [illegible] Britain, [illegible] thereby enabled to make [illegible] privileges granted to Great Britain, of ſeizing French property in American veſſels. The [illegible] by the American government [illegible] public ſenſe of their conduct, that a [illegible] treaty [illegible] in 1778, naturally expected, that [illegible] would neutralize the [illegible]; whereas the treaty [illegible] concluded between the United States and England, contained no ſimilar regulation. The American government therefore aſſerted, that it acted in perfect conformity to both treaties, and thought it [illegible] the Engliſh to ſeize French property on board American veſſels, the French, without a breach of their treaty with America, could not be permitted to make repriſals in ſimilar circumſtances on the Engliſh. This mode of reaſoning, which was [illegible] with the letter of the treaties, if not with political honeſty, did not ſatisfy the French directory; and accordingly, they entered into a formal reſolution to ſuſpend the execution of their treaty with America, and declared, that they would treat all neutral veſſels in the ſame manner, as they ſhould ſuffer the Engliſh to treat them. The only effect of this threatening was to augment the maritime power of Great Britain; merchants belonging to neutral ſtates being thereby induced on all occaſions to entruſt their goods to the Britiſh flag, as the only power capable of affording them full protection. Still, however, by the management of the American ambaſſador Mr Monroe, who was known to belong to the antifederaliſt party, the French directory was preſerved in tolerable temper with the Americans; but upon his being recalled, and Mr Pinckney, a man of the oppoſite faction, appointed his ſucceſſor, they manifeſted their indignation, by refuſing to receive him, or even to ſuffer him to reſide as a private citizen at Paris. They proceeded to no further hoſtility, however, in expectation that a change favourable to their intereſts might occur in the American government. For now in the month of October 1796, George Waſhington, the preſident, publicly announced his reſolution of retiring from political affairs on account of the infirmities of age, and requeſted his friends not to nominate him in the next election of preſident.

414 New preſident.

The election of a new preſident to ſucceed a man of ſuch diſtinction as George Waſhington, afforded abundant aliment for the animoſity of the political parties in America. The federaliſts wiſhed to advance to the office of preſident Mr Pinckney of South Carolina, a man whoſe perſonal character was much reſpected, and who had lately been ambaſſador in England. He had alſo been engaged in ſome negotiations with Spain, in which his conduct gave general ſatisfaction. His name was aſſociated by the federaliſts, in their votes, along with that of John Adams, the vice-preſident. They conſidered it as probable, that he would have the ſecond greateſt number of votes in the north, where it was expected that John Adams would have the majority; and it was hoped, that he would at leaſt have the ſecond number of votes in the ſouthern ſtates,

America. if Mr Jefferſon ſhould have the majority. Upon the whole, however, the federaliſts generally profeſſed a wiſh that Mr Adams ſhould be preſident, although it is ſaid, that the views of their leaders were privately directed to procure the elevation of Mr Pinckney.

The antifederaliſts, on the contrary, openly and unanimouſly ſupported Mr Jefferſon. He was well known to the public as a man of letters. He had been ſecretary of ſtate and ambaſſador in France, and was active in procuring the original declaration of independence. The two parties ſtrained every nerve to ſupport their reſpective candidates. They mutually accuſed each other of tricks to invalidate votes, of frauds in the returns, and of all the other unfair proceedings ſo well underſtood in the parent ſtate of which they are coloniſts. The leaders of the federaliſts were deceived in their expectation of gaining a majority for Mr Pinckney. John Adams had only one vote beyond an abſolute majority of the whole which is required by the conſtitution, and was declared preſident; and Mr Jefferſon having the ſecond greateſt number of votes, or three votes fewer than Mr Adams, was declared vice-preſident.

When the news arrived in America of the French directory's refuſal to receive Mr Pinckney as miniſter from the United States, their conduct was repreſented by Mr Adams the preſident, in a ſpeech to congreſs, as a high and aggravated inſult to the dignity of the American people. The federaliſt party, by whom he was ſupported, had a majority in congreſs, and ſome preparations for war were voted; but as the parties were nearly balanced, the opinions of the oppoſition very frequently prevailed, and the miſſion of three ambaſſadors to demand an explanation from the French government was ſcarcely followed by any preparations for hoſtility. But by this time the perſons who retained the poſſeſſion of the ſupreme power in France, under the appellation of an executive directory, had diſplayed a character which deeply wounded the intereſts of their country with all foreign nations, and ultimately overturned the republican conſtitution which had been attempted to be eſtabliſhed. Their conduct was inſolent and corrupted, while at the ſame time they were unable to compenſate theſe defects by the ability of their management. Their negotiation with the American ambaſſadors terminated in an obſcure and unprincipled intrigue, in which it appeared that the directory wiſhed to levy a ſum of money upon America, as the price of their forbearance; a part of which ſum was to go into the public treaſury, and a part was to be received privately by the individual members of the directory. They alſo, from a ſhort-ſighted policy, authorized their privateers and cruizers to ſeize all neutral veſſels in which any article of Britiſh produce or manufacture ſhould be found, to whomſoever it belonged. As the Britiſh manufactures were in great demand in every country, this was equivalent to a declaration of hoſtility againſt all nations, while, at the ſame time, the abſolute dominion which the Britiſh navy had at this period acquired over the ocean, converted it into an impotent menace.

In conſequence of theſe events, the American congreſs, towards the end of their ſeſſion in 1798, by a ſmall majority, enacted a law, to break off all commercial relation with France or its dependencies, and to forbid the entrance of French veſſels into the American ports till the end of the ſittings of next congreſs. A premium was alſo offered for the capture of French armed ſhips by American veſſels. Still, however, though the preſident, Mr Adams, ſupported by the leaders of the federaliſt party, continued to urge the neceſſity of a war with France, yet, as the majority of the people appeared decidedly averſe to this meaſure, he had the good ſenſe to depart from his own ſentiments, and to attempt a new negotiation. As the French directory, by their miſconduct, ſpeedily brought their country to the greateſt embarraſſments, by once more arming all Europe againſt France, that nation found it neceſſary, for the ſake of its ſafety, to relinquiſh thoſe hopes of freedom for which it had made ſo many ſacrifices, and to ſubmit the whole power of the ſtate to Bonaparte, who had been the moſt ſucceſsful commander of its armies. He repaired the errors in the directory by more moderate and better management, and ſettled all differences with the American ſtates. America.

415 Yellow fever.

During theſe political tranſactions, the two greateſt cities of theſe ſtates, Philadelphia and New York, had ſuffered very ſeverely by a peſtilential diſorder called the *yellow fever*. It is underſtood to have been brought originally by veſſels employed in the ſlave-trade on the weſtern coaſt of Africa to the Weſt India iſlands. After producing the moſt dreadful mortality in that quarter, it was conveyed to the two great cities in America already mentioned, in conſequence of their frequent intercourſe with the iſlands. From them it at times extended itſelf to the other maritime towns. Having once begun, it returned during different ſeaſons towards the end of ſummer, and many thouſand perſons periſhed by it, beſides thoſe whoſe health was permanently injured. More than half the inhabitants fled from the cities; but thoſe infected fortunately either did not infect the inhabitants of the country to whoſe houſes they went, or the infection produced a leſs dangerous form of diſeaſe. The rents of houſes ſunk about one half in Philadelphia and New York, and their rapid increaſe was conſiderably retarded. In conſequence, however, of the adoption of thoſe meaſures of precaution which have been ſo long practiſed in Europe, but which have been neglected in America, the danger of a return of the ſame calamity ſeems to be ſomewhat diminiſhed, though from the lateſt accounts it is by no means done away.

416 Waſhington, or the federal city.

It has been already mentioned, that a reſolution was very early adopted in America of endeavouring to eſtabliſh a federal city, as it is called, as the capital of the United States, which ſhould be the ſeat of government independent of every particular ſtate, and having its ſovereignty veſted in the whole union; and we have ſtated the circumſtances which led to its eſtabliſhment on the banks of the Potowmack. Congreſs accordingly commenced its ſittings at Waſhington at the end of the year 1800. For ſeveral years preceding that period the commiſſioners of congreſs had been employed in making out a plan of the city, and in erecting public buildings for the accommodation of the government. As the deſire of wealth is a prevailing paſſion in America, and as the people there readily engage in extenſive ſpeculations upon every ſubject, the federal city of Waſhington was for ſome time made the object of an endleſs variety of purchaſes and ſales of lots of building

America. building ground. The public papers both in Europe and America were filled with exaggerated praiſe of the new city, and with fictitious accounts of the rapidity of its progreſs towards completion. After various perſons had ſuffered conſiderably by unſucceſsful ſpeculations, it was diſcovered that it was an eaſier matter to exhibit upon paper a magnificent and beautiful city, fitted from its extent to be the capital of the world, than to rear its buildings and to fill them with inhabitants. The perſons who had obtained property in the intended capital of the United States, became at laſt convinced, therefore, that the immenſe extent of ground marked out in the plan would not be ſo ſpeedily covered with houſes as the ſanguine ſpirit of the Americans had originally led them to expect. The proprietors of different lots therefore became rivals. Inſtead of boaſting of the excellencies of the federal city in general, every ſpeculator began to boaſt of the advantages of that ſide of the city where his own property lay, and to depreciate every other quarter. Hence the buildings have been begun in ſituations very remote from each other, ſo as rather to form a ſet of ſcattered hamlets than a ſingle town.

The federal city is ſituated in a kind of triangular peninſula, formed by the junction of the rivers called *Potowmack* and *Eaſt Branch*. The plan includes 4124 acres; of theſe 712 are allotted to 16 ſtreets, ſeverally bearing the names of the 16 ſtates, and to other ſtreets of leſs magnitude, with ſquares and public gardens. The 3412 acres which remain, being the property of the union, and of the original proprietors of the ſoil, contain 23,000 lots of houſes, excluſive of 3000 feet of lots ſet aſide for quays. The capitol, where congreſs aſſembles, is at the diſtance of a mile and a half from the preſident's houſe, and three quarters of a mile at leaſt from thoſe parts of the rivers that are moſt convenient for commerce. It is alſo to be obſerved that, in the neighbourhood of the ſpot choſen for the federal city, there previouſly exiſted a village called *Georgetown upon the Potowmack*. From theſe circumſtances, various quarters of the new city were regarded as more or leſs likely to become ſpeedily populous; and, according to the different notions entertained by individuals, have become more or leſs favourite points for building upon. The inhabitants of Georgetown, who had purchaſed many lots of the intended city in the quarter neareſt themſelves, repreſented their own port, and the commerce already belonging to it, as a favourable opening to the commerce of the city of Waſhington, which would therefore naturally fix itſelf in that quarter. The proprietors of lots near the point of the peninſula contended, that their ſituation on the banks of both rivers, being at an equal diſtance between the capitol and the preſident's houſe, and being moſt airy, healthy, and beautiful, would ſoon be preferred to all others. The proprietors on the Eaſt Branch decried the port of Georgetown, and the whole banks of the Potowmack, as not ſecure in winter from ſhoals of ice. They repreſented the point placed between two rivers as incapable of enjoying completely the advantages of either: at the ſame time they boaſted of the great depth and ſafety of their own port, and of their vicinity to the capitol, where all the members of congreſs muſt aſſemble once every day, and from which their diſtance is not more than three quarters of a mile. Amidſt theſe contending ſpeculations, however, though the federal city of Waſhington is underſtood to be advancing with conſiderable rapidity, it is nevertheleſs ſtill in its infancy, and for many years the greateſt part of it muſt remain [illegible] to the ſheep or the hare. Its proſperity muſt depend in a great degree upon the ſtability of the federal government, and the perſeverance which it has manifeſted by congreſs in continuing its ſittings there amidſt the inconveniences ariſing from defective accommodation. Theſe [illegible] will no doubt ſpeedily diminiſh, and the government has great inducements to perſevere in ſettling itſelf upon a ſpot without the limits of every particular ſtate; and the police of which is entirely in the hands of congreſs, a circumſtance which greatly tends to ſecure the tranquillity of the deliberations of that body. Neither does there ſeem to exiſt any reaſon for doubting the permanency of the federal government. The ſeveral ſtates are ſo cloſely connected with each other by ſituation, and commercial and ſocial intercourſe, that it is impoſſible for them to enjoy any tolerable degree of tranquillity or order without ſubmitting to a common head. If they ſhall become incapable of governing themſelves as a republic, the evils of anarchy will no doubt ſpeedily compel them to ſubmit to a maſter, but their natural connexion will preſerve them as a ſingle nation; and when a capital is once eſtabliſhed, with public buildings for the accommodation of all the branches of national government, it is never eaſily altered.

417 Preſent ſtate of parties.

In the mean time it appears that the moſt ſtrictly republican or democratic intereſt in America is gradually acquiring an aſcendancy. At the election of preſident of the United States in 1800, the antifederaliſts, or, as they are ſometimes called by their antagoniſts, the jacobin party, were ſucceſsful, though after an eager ſtruggle, in raiſing their favourite candidate, Mr Jefferſon, to that ſupreme office. The two factions are underſtood to be greatly irritated againſt each other; but this circumſtance does not appear at all to diſturb the tranquillity of the ſtate, or the power of the laws. Indeed it is probable that the ſucceſs of the moſt violent party may be the firſt ſtep towards its acquiring a moderate character, as the experience of mankind in other countries ſufficiently demonſtrates, that one of the ſureſt means of inſpiring popular leaders with a reſpect for conſtituted authorities often conſiſts in admitting them to a participation of power.

As the United States of America, though they have received emigrants from all countries, were originally a Britiſh colony, and upon the whole peopled from the Britiſh iſlands, every circumſtance in their ſituation and hiſtory muſt always be highly intereſting to the inhabitants of this country. We are connected with them by the ties of conſanguinity, as well as by the poſſeſſion of a common language, laws, and religion. It is only in Great Britain, of all the countries on earth, that a native of the United States can find himſelf as it were at home, or among a kindred people, poſſeſſing the ſame manners, inſtructed by the ſame books, and conſequently poſſeſſing the ſame general features of character and the [illegible]. On the other hand, it muſt always be to the Britiſh nation a ſubject of fair and juſtifiable pride, to reflect, that whatever may hereafter be the deſtiny of Europe, amidſt its wars, debts, taxes, and uſurpations, Britain has eſtabliſhed in a ſecure and unaſſailable

America. affailable poſition, a body of people of its own race and character, who may hereafter be the guardians and preſervers of civilization and of letters to mankind.—Temporary hoſtilities did indeed exiſt between the two countries; and our neighbours the French were abundantly induſtrious in endeavouring to ripen the ſeeds of diſcord, and to convert them into a ſource of permanent animoſity; but their attempts have been ultimately unſucceſsful, being founded upon caſual and paſſing circumſtances, which could not long prevail againſt ſo many bonds of union that are founded upon the moſt laſting ſentiments and qualities of the human mind. It had been better, no doubt, both for Britain and for the colonies, that the war had been avoided. In the natural courſe of things, American independence muſt have taken place. Had the colonies waited another century, till they ſhould poſſeſs five times the population of the parent ſtate, one of two things muſt have occurred; either the Britiſh monarch would have deſerted his little iſlands, to reſide amidſt the great maſs of his people beyond the Atlantic, as his anceſtor James VI. deſerted Edinburgh to go to live at London; or the ſeparation would have coſt America only a trifling effort, and would have ſaved her all the calamities of the war of the revolution, and the difficulties which followed it. But young nations, like young men, are frequently in too great a haſte to act a part upon the great theatre of the world, and for a while, as happened to the United States, they ſometimes ſuffer by their raſhneſs. This raſhneſs, or, as it may perhaps be called, this generous ardour, on the part of America, at the reluctance on the part of Britain to relinquiſh ſo flouriſhing a branch of her empire, will be regarded by future generations of Britons, and of Americans, as ſentiments which naturally reſulted from the ſituation of the parties, and as no cauſe of continued diſlike. Though two nations, they muſt for ever be one people; and, as the huſbandmen of America muſt for ages be the employers of the manufacturers of Britain, it is probable that the intercourſe and amity of the countries, founded upon ties both of intereſt and inclination, will long continue to exiſt and to increaſe. We think it here neceſſary, therefore, as far as our information extends, to give a general account of the preſent ſituation of the United States.

In the treaty of peace concluded in 1783, the limits of the United States are thus defined: "And that all diſputes which might ariſe in future on the ſubject of the boundaries of the ſaid United States may be prevented, it is hereby agreed and declared, that the following are and ſhall be their boundaries, viz. from the north-weſt angle of Nova Scotia, viz. that angle which is formed by a line drawn due north from the ſource of St Croix river to the Highlands, along the ſaid Highlands, which divide thoſe rivers that empty themſelves into the river St Lawrence, from thoſe which fall into the Atlantic ocean, to the north-weſternmoſt head of Connecticut river; thence down along the middle of that river to the 45th degree of north latitude; from thence by a line due-weſt on ſaid latitude until it ſtrikes the river Iroquois or Cataraquy; thence along the middle of ſaid river into Lake Ontario, through the middle of ſaid lake, until it ſtrikes the communication by water between that lake and Lake Erie; thence along the middle of ſaid communication into Lake Erie, through the middle of ſaid lake, until it arrives at the water communication between that lake and Lake Huron; thence through the middle of ſaid lake to the water communication between that lake and Lake Superior; thence through Lake Superior, northward of the iſles Royal and Philipeaux to the Long Lake; thence through the middle of the ſaid Long Lake, and the water communication between it and the Lake of the Woods, to the ſaid Lake of the Woods; thence through the ſaid lake to the moſt north-weſtern point thereof, and from thence on a due weſt courſe to the river Miſſiſſippi; thence by a line to be drawn along the middle of ſaid river Miſſiſſippi, until it ſhall interſect the northernmoſt part of the 31ſt degree of north latitude. South, by a line to be drawn due eaſt from the determination of the line laſt mentioned, in the latitude of 31 degrees north of the equator, to the middle of the river Apalachicola or Catahouche; thence along the middle thereof to its junction with the Flint river; thence ſtraight to the head of St Mary's river, and thence down along the middle of St Mary's river to the Atlantic ocean. Eaſt, by a line to be drawn along the middle of the river St Croix, from its mouth in the bay of Fundy to its ſource; and from its ſource directly north to the aforeſaid Highlands, which divide the rivers that fall into the Atlantic ocean from thoſe which fall into the river St Lawrence, comprehending all iſlands within twenty leagues of any part of the ſhores of the United States, and lying between lines to be drawn due eaſt from the points where the aforeſaid boundaries between Nova Scotia on the one part and Eaſt Florida on the other, ſhall reſpectively touch the bay of Fundy, and the Atlantic ocean, excepting ſuch iſlands as now are, or heretofore have been, within the limits of the ſaid province of Nova Scotia."

In this deſcription there are ſome trifling inaccuracies; in particular it now appears, that a line drawn due weſt would not touch the river Miſſiſſippi, but would paſs to the northward of its ſource. Neither was it well underſtood, by the negotiators, what river was meant under the name of St Croix. Theſe points, however, were adjuſted in the treaty between Great Britain and the United States, which was entered into in 1795, and commiſſioners were appointed to point out the river which ſhould be conſidered as the boundary, and to fix upon a line of junction between the Lake of the Woods and the river Miſſiſſippi. The reſult of the whole is, that the territory of the United States of America may be conſidered as a vaſt triangle, of which the Atlantic ocean on the eaſt forms the baſe. The ſouthern ſide is formed by the river Miſſiſſippi, and the northern by a very irregular line wholly formed by a long chain of lakes and rivers, excepting at its eaſtern part, which conſiſts of a piece of territory called New Brunſwick, reſerved by Great Britain near the ſea coaſt. In this way, excepting on the corners touching New Brunſwick belonging to Britain on the north-eaſt, and Florida belonging to Spain on the ſouth-eaſt, the United States are almoſt entirely ſurrounded by water. Parallel to the Atlantic ocean, from Georgia on the ſouth to the moſt northern ſtates, runs a tract of mountainous country, which receives the general appellation of the *Alleghany mountains*. The principal chain of theſe mountains is croſſed by no river. On the eaſtern ſide of it a vaſt variety of ſtreams of the greateſt magnitude are formed, which deſcend into the Atlantic ocean. Beyond this chain of mountains, and parallel

419 Errors in the deſcription.

America. to it, at a conſiderable diſtance, is the great river Ohio. All the rivers that take their origin among the Alleghany mountains, beyond the principal ridge, flow weſtward into the Ohio. This lat river, after paſſing along the weſtern ſide of the Alleghany mountains, falls into the Miſſiſippi, which paſſes round the ſouthern extremity of theſe mountains into the Atlantic ocean at the gulf of Mexico. The territory of the United States weſt of the Ohio may alſo be conſidered as forming a triangle, of which the river Ohio, on the eaſt, forms the baſe; while the two ſides are formed by the chain of lakes already mentioned, and by the river Miſſiſippi. This weſtern country, which is of immenſe extent, is ſtill in a great meaſure poſſeſſed by the Indians. The whole territory of the United States contains, by computation, a million of ſquare miles, in which are - 640,000,000 of acres,
Deduct for water, 51,000,000

Acres of land in the United States, 589,000,000

The territory to the weſtward of the river Ohio amounts to about 220,000,000 of acres, after deducting upwards of 40,000,000 for water. The whole of this immenſe extent of unappropriated territory belongs to congreſs, as the head of the union, and is ſet apart for the payment of the public debts of the confederation. It is meant, when peopled, to be divided into new ſtates to form a part of the union.

420 The country well watered.

No part of the world has ſo many navigable waters adjoining to its territory, or paſſing through it, as the United States of America. The Atlantic ocean, which forms their eaſtern boundary is indented with numerous bays, ſome of which are of very conſiderable extent, and advance to a conſiderable diſtance into the country. On the northern or north-eaſterly part of the ſtates is the bay of Fundy, between Nova Scotia and New England, chiefly remarkable for its tides, which riſe to the height of 50 or 60 feet, and flow ſo rapidly as to overtake animals that feed upon the ſhore. Next to it, on the ſouthward, are the bays called *Penobſcot* and *Caſco*, extending along the coaſt of the province of Maine, which is the moſt northern territory of the United States. Maſſachuſets bay follows theſe, which waſhes the town of Boſton, and is comprehended between Cape Ann on the north, and Cape Cod on the ſouth. Various ſmall bays ſucceed to theſe, to the ſouthward, after which is Long Iſland ſound. This is a kind of inland ſea, from three to 25 miles broad, and about 140 miles long, extending the whole length of the iſland, and dividing it from Connecticut. It communicates with the ocean at both ends of Long Iſland, and affords a very ſafe inland navigation. Near the weſt end of this ſound, about eight miles eaſtward of the city of New York, is the ſtrait called *Hell Gate*. It is remarkable for its whirlpools, which make a tremendous roaring at certain times of the tide. They are occaſioned by the narrowneſs and crookedneſs of the paſs, and by a bed of rocks that extends quite acroſs it: but, a faithful pilot can with ſafety conduct a ſhip of any burden through this ſtrait, with the tide, or at ſtill water, with a fair wind. Still proceeding to the ſouth, is Delaware bay, 60 miles in length, which is ſo wide in ſome of its parts that a ſhip in the middle cannot be ſeen from the land. But of all the Ameri-

can bays, the Chesapeak in the [illegible] is the largeſt. Its entrance [illegible] is between Cape Charles, and Cape Henry in Virginia, 12 miles wide, and it extends 270 miles to the northward, dividing Virginia from Maryland. It is from ſeven to 18 miles broad, and generally [illegible] fathoms deep, affording many commodious harbours and a ſafe and eaſy navigation. It receives the waters of the Sasquehanna, Patowmack, Rappahannock, [illegible] and James' River, which are all large [illegible] To the ſouth of the Chesapeak, on the coaſt of South Carolina, are the three bays or ſounds called *Albemarle*, *Pamlico*, and *Core*. Of theſe Pamlico ſound, which lies between the other two, is the greateſt. It is a kind of lake, or inland ſea, from 10 to 20 miles broad, and nearly 100 miles in length. It is ſeparated from the ſea in its whole length by a bank of ſand, herbage mile wide, and generally covered with ſmall trees and buſhes. Through this bank are ſeveral ſmall inlets by which boats may paſs. But Ocrecok inlet is the only one that will admit veſſels of burden into the moſt important diſtricts of Edenton and Newbern. This inlet is in lat. 35° 10′, and opens into Pamlico ſound, between Ocrecok iſland, and Core bank; the land on the north is called *Ocrecok*, and on the ſouth *Portſmouth*. A bar of ſand having 14 feet water at low tide croſſes this inlet; and ſix miles within this bar the channel is croſſed by a ſhoal called the *Swaſh*, having only eight or nine feet water at full tide. Few mariners, though acquainted with the inlets, chooſe to bring in their own veſſels, as the bar often ſhifts during their abſence on a voyage. To the north of Pamlico ſound, and communicating with it, Albemarle ſound extends 60 miles in length, and is from eight to 12 in breadth. Core ſound, which lies to the ſouth of Pamlico, likewiſe communicates with it. Theſe ſounds are ſo large, when compared with their inlets from the ſea, that no tide can be perceived in any of the rivers which empty into them, nor is the water ſalt even in the mouths of theſe rivers. A tract of low marſhy territory between Pamlico and Albemarle ſounds is called *Diſmal Swamp*. The ſame name, however, is alſo given to another tract at ſome diſtance to the northward of Albemarle ſound. A part of this laſt tract is in North Carolina, and the reſt within the boundaries of Virginia.

As already ſtated, the northern or north-weſtern boundary of the United States, conſiſts almoſt entirely of a chain of lakes dividing the country from Canada. Theſe lakes conſiſt of by far the largeſt collections of freſh water that are to be found in the world. The uppermoſt or moſt weſterly is called the *Lake of the Woods*, from the great foreſts upon its banks. Its length from eaſt to weſt is about 70 miles, and in ſome places it is 40 miles wide. To the eaſtward of it is Rainy or Long Lake, which is nearly 100 miles long, but never more than 20 miles wide. To the eaſtward of this is Lake Superior, juſtly termed the *Caſpian of America*. It is undoubtedly the largeſt baſon of freſh water in the world, being 1500 miles in circumference. The water is pure and tranſparent, and appears generally to reſt upon a bed of huge rocks. A great part of its coaſt is likewiſe rocky and irregular. It contains many iſlands, two of which are very conſiderable. The one, called *Iſle Royal*, is about 100 miles long, and in many places 40 miles broad. The lake abounds with fiſh, particularly trout and ſturgeon. It

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America. is affected by ſtorms in the ſame manner as the ocean. Its waves run as high, and the navigation is equally dangerous. It diſcharges its waters from the ſouth-eaſt corner, by a ſtrait called *St Marie*, of about 40 miles long, into Lake Huron; but this ſtrait is not navigable, on account of its having at one part what the Americans call a *rapid*, that is, a quick deſcent of the waters among rugged rocks. It does not appear, however, that above one-tenth of the waters which are conveyed by about 40 rivers into Lake Superior, paſs out of it by the ſtrait of St Marie, which nevertheleſs is its only viſible outlet. Conſiderable quantities of copper ore are found in beds upon many ſmall iſlands in Lake Superior, but it has not hitherto become an object of commerce.

Lake Huron is next in magnitude to Lake Superior, being about 1000 miles in circumference. On the north ſide of it is an iſland 100 miles in length, and no more than eight miles broad. This iſland is conſidered as ſacred by the Indians. On its ſouth-weſt ſide Lake Huron ſends out a bay, called *Saganum Bay*, into the country, of about 80 miles in length and about 18 in breadth. At its north-weſt corner, this lake communicates with Lake Michigan by the ſtraits of Michillimakinac.

Lake St Claire receives the waters of the three great lakes Superior, Michigan, and Huron, and diſcharges them, through a river or ſtrait called *Detroit*, into Lake Erie. It is about 90 miles in circumference. Its navigation is obſtructed by a bar of ſand near the middle, which prevents loaded veſſels from paſſing.

Lake Erie is nearly 300 miles long from eaſt to weſt, and about 40 in its broadeſt part. Its iſlands and banks are much infeſted with rattle-ſnakes. Near the iſlands the water is covered for many acres together with the large pond lily, on the leaves of which, in the ſummer ſeaſon, lie myriads of water ſnakes baſking in the ſun. The American geographers tell us of a remarkable ſnake found in this lake, called the *hiſſing ſnake*. It is about 18 inches long, and ſmall and ſpeckled. When approached it flattens itſelf, and the ſpots upon its ſkin become viſibly brighter. At the ſame time it blows from its mouth with great force a ſubtile wind, ſaid to be of a nauſeous ſmell, which, if drawn in by the breath of the traveller, infallibly brings on a decline, that in a few months proves fatal. This lake is of more dangerous navigation than any of the others, on account of the many perpendicular ſharp rocks which it contains. It communicates with Lake Ontario by the river Niagara, which is about 30 miles in length; and which being croſſed by a branch of the Alleghany mountains, conſiſting of lime-ſtone rock, forms the celebrated falls of Niagara, one of the moſt wonderful natural objects in the world, on account of the immenſe weight of water that is at once precipitated from a height which different travellers have eſtimated variouſly, from 137 to 160 feet. It has been often deſcribed; but as every traveller ſeems to view it with greater aſtoniſhment than his predeceſſors, we ſhall ſtate the terms in which it is mentioned by the duke de la Rochefoucault Liancourt, who viſited it in 1795. "At Chippiway the grand ſpectacle begins. The river which has been conſtantly expanding from Fort Erie to this place, is here upwards of three miles wide; but on a ſudden it is narrowed,

421 Deſcription of Niagara.

and the rapidity of the ſtream redoubled by the declivity of the ground on which it flows, as well as the ſudden contraction of its bed. The channel is rocky; and the interſperſed fragments of rocks increaſe the violence of the ſtream. The country is flat and even to this point; but here a range of white rocks ariſes on each ſide of the river, which is contracted to half a mile's breadth. This range is a branch of the Alleghany mountains, which proceeding from Florida, previouſly to their reaching this point, interſect the whole continent of America. The river, more cloſely hemmed in by the rocks on the right encroaching upon its channel, branches into two arms, one of which flows along the bank formed by the rocks on the right; and the other, far more conſiderable, being ſeparated by a ſmall iſland, makes ſtraight on to the left, and ſweeps through a baſon of ſtone which it fills with much foam and noiſe. At length, being again obſtructed by other rocks which it meets on its right, it alters its courſe with redoubled violence; and, along with the right arm, ruſhes down a perpendicular ledge of rocks 160 feet high, nearly half concave, and probably worn out by the inceſſant impetuoſity of the waters. Its width is nearly equal to that of its bed, the uniformity of which is only interrupted by an iſland which ſeparates the two arms, reſts unſhaken on its rocky baſis, and ſeems, as it were, to ſwim between the two ſtreams which ruſh down at once into this ſtupendous chaſm. The waters of the lakes Erie, Michigan, St Claire, Huron, and Lake Superior, and of the numerous rivers emptying themſelves into theſe lakes, inceſſantly replace the water that thus daſhes down. The water of the falls tumbles perpendicularly on the rocks. Its colour is at times a dark green; at others a foaming white, brilliant throughout, and diſplaying a thouſand variegations as it is ſtruck by the rays of the ſun, or, according to the time of the day, the ſtate of the atmoſphere, the force of the wind, &c. The water which ruſhes down the rocks riſes in part in a thick column of miſt, often towering above the height of the falls and mixing with the clouds. The remainder, broken in its perpendicular deſcent by fragments of rocks, is in continued agitation, ſpouts and foams, and caſts on ſhore logs of wood, whole trees, boats, and wrecks, which the ſtream has ſwept along in its courſe. The bed of the river formed by the two ridges of rocks, which extend a great way farther, is ſtill more narrowed, as if part of this mighty ſtream had vaniſhed during the fall, or were ſwallowed up by the earth. The noiſe, agitation, irregularity, and rapid deſcent of the ſtream, continue ſeven or eight miles farther on; and the river does not become ſufficiently placid for a ſafe paſſage, till it reaches Queenſtown nine miles from the falls. It is ſuperfluous to mention, that notwithſtanding the ſeverity of the winter in this country, the *cataract* as well as the river above it are never frozen. But this is not the caſe with the lakes and ſmaller rivers that ſupply it with water. Enormous flakes of ice ruſh conſtantly down this cataract when the thaw ſets in, without being entirely daſhed to pieces on the rocks; and thus are frequently piled in huge maſſes up to half its height. With the noiſe occaſioned by the falls, we were leſs ſtruck than we expected; and Mr Guillemard, as well as myſelf, who had both ſeen the Rhine fall near Schaf hauſen, could not but acknowledge

America. ledge that the noiſe it produces is far more ſtriking. Yet I muſt repeat it again and again, that nothing can ſtand the teſt of compariſon with the falls of Niagara. Let no one expect to find here ſomething pleaſing, wildly beautiful, or romantic; all is wonderfully grand, awful, ſublime: every power of the ſoul is arreſted; the impreſſion ſtrikes deeper the longer you contemplate, and you feel more ſtrongly the impoſſibility of doing juſtice to your perceptions and feelings."

Lake Ontario, which is the loweſt of the great lakes that form the northern frontier of the United States, is of an oval form, and abounds with fiſh of an excellent flavour. It diſcharges itſelf on the north-eaſt into the river Iroquois, which, at the town of Montreal, takes the name of the river St Lawrence; and paſſing by Quebec, falls into the Atlantic ocean at the gulf of St Lawrence.

The river Miſſiſſippi, which forms the third or ſouth-weſtern boundary of the United States, divides their territory from the country of Louiſiana, which belonged to Spain, but has recently been ceded to France. This river is ſuppoſed, when its windings are included, to be upwards of 3000 miles in length, and to extend nearly 2000 in a direct line. It is navigable to the falls of St Anthony in about lat. 44° 30′. About lat. 29°, a large river called the *Illinois*, belonging to the United States, falls into it; and it is ſoon afterwards joined by a larger river than itſelf from the ſouth, called the *Miſſouri*, which has a greater length of navigation. At the diſtance of 230 miles below its junction with the Miſſouri, the river Ohio, which is a mile in breadth, falls into the Miſſiſſippi. From the mouth of the Ohio it continues to deſcend 1005 miles to the town of New Orleans, after paſſing which it falls into the gulf of Mexico. In ſpring floods the Miſſiſſippi riſes to a great height and overflows its banks, depoſiting upon them immenſe quantities of fertilizing mud or ſlime. After its junction with the Miſſouri, its waters become ſo loaded with the earthy particles, that in a half-pint tumbler they have been found to depoſite a ſediment of two inches of ſlime. Its banks, to a great diſtance from its mouth, appear to have been gradually formed by the depoſition of trees and mud, which its floods bring down from the higher country. The ſoil is accordingly extremely ſoft, rich, and moiſt. It is apt to be broken up by the periodical floods of the river, which ſometimes appears to alter its channel.

When in flood, the current of the Miſſiſſippi is ſo ſtrong that with difficulty it can be aſcended. The current deſcends at the rate of five miles an hour; but it is obſerved, that at this period there is a counter current which runs at the rate of about two miles an hour, cloſe to the banks of the river, which greatly aſſiſts the aſcending boats. In autumn, when the waters are low, it does not deſcend faſter than two miles an hour, unleſs where the ſtream is narrowed by cluſters of iſlands, ſhoals, and ſand banks. The circumference of many of theſe ſhoals being ſeveral miles, the voyage is rendered more tedious and dangerous in autumn than in ſpring, when the water covers them to a great depth. The upper parts of the Miſſiſſippi are uſually navigated in veſſels carrying about 40 tons, and rowed by 18 or 20 men; and what is remarkable, the depth of the river increaſes as it is aſcended. The voyage from New Orleans, near the mouth of the Miſſiſſippi, upwards to the river Illinois, is uſually performed in eight or ten weeks. The river Miſſouri is ſaid to be navigable about 1200 or 1300 miles beyond its junction with the Miſſiſſippi, but no part of it is within the territory of the United States. By a treaty concluded with Spain in 1795, it was agreed that the navigation of the Miſſiſſippi ſhould be enjoyed in common by the ſubjects of Spain and the citizens of America.

The waters in the interior of the United States are no leſs convenient for navigation than thoſe upon the extremities of the country.

422 Lakes in the interior.

The lakes in the interior, however, are by no means equal in extent to thoſe upon the frontier. They are chiefly ſituated in the ſtate of New York or in its vicinity. Lake Champlain is the largeſt. It lies nearly to the eaſt of Lake Ontario, and is about 80 miles in length from north to ſouth, and 14 miles over at its broadeſt part. It is well ſtored with fiſh, and the land around it is good. Crown Point and Ticonderago are ſituated on the ſouthern bank of this lake. Lake George lies in a mountainous country ſouth-weſt of Lake Champlain, and is about 55 miles long from north-eaſt to ſouth-weſt, but narrow. The lakes Seneca and Cayoga are each about 30 or 40 miles in length. Lake Oneida extends to 25 miles. Beſides theſe there are ſeveral others of leſs magnitude, though uſeful for inland navigation, called *Otſego*, *Chatoque*, *Caniaderago*, and *Uſſayanthe*. There is alſo in Orange County an amphibious tract called the *Drowned lands*, conſiſting of about 40,000 or 50,000 acres. The waters which deſcend from the ſurrounding hills, being but ſlowly diſcharged by the river Wallkill, cover theſe vaſt meadows every winter, ſo that the ſurface of them can be navigated. They were thus rendered extremely fertile, but the inhabitants in the neighbourhood are expoſed to intermittent fevers.

423 Eaſtern rivers.

It has been already mentioned, that, to the eaſtward of the Alleghany mountains, all the rivers flow into the Atlantic ocean. Of theſe, beginning with the north, and going ſouthward, the following are the moſt remarkable. In the ſtates to the eaſtward of New York, which were formerly called the *New England colonies*, and which are now divided into the five ſtates of New Hampſhire, Maſſachuſets, Rhode Iſland, Connecticut, and Vermont, there is only one river of any importance, called *Connecticut river*. It riſes in lat. 45° 10′, long. 71° weſt from London. Its length in a ſtraight line is nearly 300 miles. At its mouth is a bar of ſand which obſtructs the navigation. Ten feet water at full tides is found upon this bar. The river is navigable to Hartford, which is upwards of 50 miles from its mouth, and the produce of the country for 200 miles above is brought thither in boats. The boats which are uſed in this buſineſs are flat-bottomed, long, and narrow, for the convenience of going up the ſtream, and of ſo light a make as to be portable in carts. They are taken out of the river for ſeveral miles at different carrying-places.

To the ſouth of Connecticut river is Hudſon's river, one of the largeſt and fineſt in the United States. It riſes in the mountains between the lakes Ontario and Champlain, and is 250 miles in length, falling into the ocean near New York, which ſtands upon it. About 60 miles above New York the water becomes freſh; but

but the tide flows a few miles beyond the flourishing town called *Albany*, 160 miles above New York, and to this distance the river is navigable by sloops of 80 tons burden. From Albany to the neighbourhood of Lake George is 65 miles, and to this distance the river is navigable by light boats; but there are two portages or carrying places in the way, of half a mile each. By this river the produce of the remotest farms is easily and speedily conveyed to a certain and profitable market at the great trading city of New York. Its banks are populous to a considerable distance, and a flourishing inland trade is carried on upon it between Albany and New York in nearly 100 vessels of about 70 tons burden, the greater part of which belong to the inhabitants of Albany. They make ten voyages in a year, are navigated by a master, a mate, and two men, who receive of wages, the master 20, the mate 15, and the seamen 9 dollars a-month each.

The next great river to the southward is the Delaware. It rises in the state of New York in Lake Utsayantho, and takes its course south-west, till it crosses into Pennsylvania, in latitude 42°. Thence it still proceeds southward, dividing the states of New York and New Jersey, passing into the ocean through Delaware bay, having New Jersey on the north-eastern side, and Pennsylvania and Delaware on the west. From the mouth of Delaware bay, between Cape Henlopen and Cape May, to the city of Philadelphia, is about 118 miles. So far there is a sufficient depth of water for a 74 gun ship. At Philadelphia the river is extremely beautiful, passing through a rich and populous country. It is three miles broad, and the water is perfectly fresh. From Philadelphia upwards to Trenton Falls, where the sloop-navigation ends, is 35 miles. The river is navigable 40 miles farther for boats that carry eight or nine tons; and, with some carrying-places, it is navigable for Indian canoes, or such boats as we have already mentioned to be in use upon Connecticut river, for 150 miles. The tide reaches Trenton Falls, and rises six feet at Philadelphia. Three miles below this city, the Delaware receives the river Schuylkill, which is navigable about 85 or 90 miles.

The Susquehannah river also rises in the state of New York, crosses the state of Pennsylvania, and flows into the great bay of Chesapeak, after receiving many large streams, several of which are navigable for 50 miles; this river itself being navigable to an immense extent, though sometimes interrupted by rocks, which form troublesome rapids.

Next to these follow the Virginian rivers, the greater part of which flow into the bay of Chesapeak. The value of these streams can only be understood by an inspection of the map of the country. Almost every farm house, to the eastward of the Alleghany mountains, has a navigable river at its door; the result of which has been, that few towns of any consequence exist there, the inhabitants having been induced to extend themselves everywhere along the banks of the rivers, by means of which they enjoy at once all the advantages of agriculture and of commerce; every planter being in some measure a merchant as well as a cultivator of the soil. The most northerly of the Virginian rivers is the Potowmack, upon which the federal city of Washington is placed. It is seven miles and a half broad at the mouth. The distance from the capes of Virginia to the termination of the tide-water in this river is above 300 miles, and it is navigable for ships of the greatest burden nearly to that extent. Thereafter, it is obstructed by four considerable falls, or rather rapid descents of the stream among rocks, which for a few miles interrupt the navigation. At these falls, however, navigation is continued, by means of canals supplied with locks; so that this river affords a water communication for many hundred miles above the termination of the tide. It also receives a great variety of navigable streams; one of which is the Shenandoah, which is said to be navigable for small vessels for upwards of 100 miles. The Rappahannock, York river, and James's river, with their various tributary streams, follow in succession. In a multitude of directions, they afford a communication across the first ridges of mountains, called the *Blue Mountains*, to the foot of the great middle ridge, or the proper Alleghany mountains. In their course they not only facilitate the intercourse of the inhabitants, but, in several situations, exhibit instances of splendid and beautiful scenery. The junction of two of these rivers is thus described by an American writer: "The passage of the Potowmack through the Blue Ridge is perhaps one of the most stupendous scenes in nature. You stand on a very high point of land. On your right comes up the Shenandoah, having ranged along the foot of the mountains 100 miles to seek a vent. On your left approaches the Potowmack, in quest of a passage also. In the moment of their junction, they rush together against the mountain, rend it asunder, and pass off to the sea. The first glance of this scene hurries our senses into the opinion, that this earth has been created in time: that the mountains were formed first: that the rivers began to flow afterwards: that in this place particularly they have been dammed up by the Blue Ridge of mountains, and have formed an ocean which filled the whole valley: that, continuing to rise, they have at length broken over at this spot, and have torn the mountain down from its summit to its base. The piles of rock on each hand, but particularly on the Shenandoah, the evident marks of their disruption and avulsion from their beds by the most powerful agents of nature, corroborate the impression. But the distant finishing which nature has given to the picture is of a very different character. It is a true contrast to the foreground. It is as placid and delightful as that is wild and tremendous. For the mountain being cloven asunder, she presents to your eye, through the cleft, a small catch of smooth blue horizon, at an infinite distance in the plain country, inviting you, as it were, from the riot and tumult roaring around, to pass through the breach, and participate of the calm below. Here the eye ultimately composes itself; and that way too the road happens actually to lead. You cross the Potowmack above the junction, pass along its side through the base of the mountain for three miles, its terrible precipices hanging in fragments over you, and within about twenty miles reach Fredericktown, and the fine country round it."

To the southward of Virginia, that is, in the states of North Carolina and Georgia, a great variety of rivers flow into the ocean. As the face of the country, however, is very level, the sand which they bring down in spring floods, or which is cast up by the ocean upon

America. the coaſt, is apt to obſtruct the entrance into them; ſo that they are deeper within the country than at the ſhore. One general rule obtains with regard to them: They are navigable by any veſſel that can paſs the bar at their mouths; and while a river continues broad enough for a veſſel to turn round, there is generally a ſufficient depth of water for it to proceed. In North Carolina, the principal rivers are, the Roanoke, which is navigable for ſmall veſſels about ſixty or ſeventy miles; the Pamlico, which is navigable for 90 miles; Neus river, which carries ſmall boats to the diſtance of 250 miles; and Trent river, which is navigable for 40 miles. In South Carolina are the Sante, the Savannah, and the Pedee, which riſe from various ſources in that ridge of mountains which divides the waters which flow into the Atlantic ocean from thoſe which fall into the Miſſiſſippi. They are navigable to a great diſtance, as well as a variety of others of leſs note. In Georgia there are alſo ſeveral rivers, which are navigable to the diſtance of eighty or ninety miles; but the entrance into them from the ocean is very difficult, as the extreme flatneſs of the country prevents the ſtream from having ſufficient force to keep their current clear of obſtructions at their confluence with the ſea-tides.

424 Weſtern waters.

The weſtern waters of the United States, or thoſe beyond the Alleghany range, are not leſs abundant, or leſs convenient for navigation, than thoſe on the eaſtern ſide of the mountains. We have already remarked, that at Fort Pitt the great river Ohio commences; being there formed by the confluence of two, or rather three rivers, the Alleghany, the Monongahela, and the Yohogany; which laſt runs into the Monongahela, about fifty miles above Fort Pitt. Theſe three rivers, previous to their junction, afford an inland navigation of many hundred miles. The Monongahela is no leſs than 400 yards wide at its mouth. At the diſtance of 100 miles above this, it is ſtill 300 yards in breadth, and affords good navigation for boats. For 50 miles higher it is ſtill navigable; though the navigation is apt to be interrupted during dry ſeaſons. The Alleghany alſo affords a very diſtant navigation, extending at times in very ſmall veſſels to within 15 miles of Lake Erie, on the northern boundary of the United States. The Ohio, being formed by the junction of theſe rivers, proceeds along the back, or weſtern ſide, of the Alleghany, to the diſtance of 1188 miles before it falls into the Miſſiſſippi, receiving in its courſe a great variety of tributary ſtreams, both from its eaſtern and weſtern ſides. It is ſaid to be one of the moſt beautiful rivers on earth; its current is gentle; its waters are clear; and its boſom ſmooth and unbroken by rocks and rapids: a ſingle inſtance excepted. It is one quarter of a mile wide at Fort Pitt, and increaſes gradually to one mile in width at its mouth; though at various places it is occaſionally broader and narrower. At the rapids or rocky part of its channel, which for about a mile diſturb the navigation, it is only a quarter of a mile in breadth. Theſe rapids are in latitude 38° 8′. It affords at all times a ſufficiency of water for light boats to Fort Pitt. The inundations of the river begin about the laſt of March, and ſubſide in July. During theſe, were it not for the rapidity of the current, and the ſudden turns of the river, a firſt rate man of war might aſcend from the ocean to the rapids. But at this place the rife [illegible] exceed ten or twelve feet. The [illegible] about thirty feet in a mile and a half. The bed of the river is a ſolid rock, and [illegible] two branches. But it is found that the [illegible] is at moſt ſeaſons navigable in ſmall boats, when conducted by faithful pilots.

The following are the chief rivers which flow into the Ohio from the eaſt. The Great Kanhaway, and the Little Kanhaway; the navigation of which laſt is much interrupted by rocks. The former, however, affords a tolerable navigation of about 90 miles, and is 280 yards wide at its mouth. The Little Kanhaway is 150 yards broad; but it is navigable only for 10 miles.—After theſe are the rivers called Sandy, Licking, and Kentucky. The former conſtitutes the eaſtern boundary of Kentucky, and reaches the Alleghany mountains. It is of no great ſize. Licking river is 100 miles in length, and 100 yards broad at its mouth. The Kentucky is a very crooked ſtream, of 200 miles in length. It falls into the Ohio by a mouth of 100 yards broad.

Below the rapids of the Ohio, in the rich country of Kentucky, is Salt river, 90 miles in length, and 80 yards wide. Green river falls into the Ohio 120 miles below the rapids. Its courſe is upwards of 150 miles. Cumberland river falls into the Ohio 415 miles below the rapids. Its length is upwards of 550 miles. Theſe rivers are navigable for boats almoſt to their ſources, without rapids or interruptions for the greateſt part of the year. Their banks are generally high, and compoſed of limeſtone. Below theſe is the Teneſſee, which runs into the Ohio a ſhort way below the mouth of the Cumberland. The Teneſſee is 600 yards wide at its mouth, and upon aſcending it, to the diſtance of 260 miles, it widens to between two and three miles; which width it continues for nearly thirty miles. Thus far it is navigable by veſſels of great burden. Here, however, it is interrupted by certain ſhoals, called the *Muſſel Shoals*, from the great [illegible] which they are covered. Theſe ſhoals can only be paſſed in ſmall boats; above which, however, the river again becomes navigable for boats of forty or fifty tons burden for ſome hundred miles; and it is eaſily navigated at leaſt 600 miles above the Muſſel Shoals.

Of the rivers that flow into the Ohio from the weſt the following are the chief: The Muſkingum, which is a gentle ſtream, confined by high banks. With a portage or carrying-place of about one mile, it affords a communication with a ſmall navigable ſtream called the *Cayahoga*, which flows into Lake Erie. Thereafter is the river Hockhocking, inferior to the Muſkingum, but navigable for large boats about ſeventy miles, and for ſmall ones much farther, through a country abounding with coal, iron, ſtone, and other minerals. Next is the Sioto, which can be navigated with large barges for 200 miles. Then follows the Great Miami, which is navigable to an immenſe diſtance, even to the neighbourhood of Lake Erie. The Wabaſh falls into the Ohio by a mouth 270 yards wide, 1020 miles below Fort Pitt. The Wabaſh is a beautiful river, with high and fertile banks. It can be navigated with boats drawing three feet water, 412 miles, and by large canoes 197 miles farther. Beſides theſe ſtreams which fall into the Ohio, a variety of

America. rivers of great ſize and importance are to be found ſtill farther to the weſtward within the territory of the United States. They either fall into the Miſſiſſippi on the ſouth-weſt, or into the great northern lakes; but they are not yet ſufficiently known to admit of accurate deſcription. One of the chief of them is the Illinois, which falls into the Miſſiſſippi, 176 miles above or to the weſtward of the Ohio, by a mouth about 400 yards wide. It is navigable to a great diſtance, and interlocks with the rivers that fall into the northern lakes, in ſuch a way as to furniſh a communication with Lake Michigan, with the aid of two portages, the longeſt of which does not exceed four miles. It receives a number of rivers, which are navigable for boats from 15 to 180 miles.

One general remark muſt be made with regard to all the American rivers; that, in conſequence of the immenſe torrents of rain which fall at certain ſeaſons of the year, they are liable to ſwell, and to overflow their banks in a moſt violent manner; ariſing, in a ſhort time, 10 or even 20, or 25 feet in height. This renders their navigation not a little difficult, on account of the great force that is neceſſary to convey a veſſel upwards againſt the rapidity of the ſtream. Theſe great floods alſo render it difficult to eſtabliſh canals at thoſe parts of any river where falls, or, as the Americans ſtile them, rapids, occur; becauſe the locks, which, in ſuch ſituations, are neceſſary upon the canals to raiſe and let down the veſſels are in great danger of being ſwept away by the ſudden ſwelling and overflowing of the river. Notwithſtanding this inconvenience, however, it is abundantly evident, that no country on earth poſſeſſes the ſame advantages, in point of internal communication, with the United States of America. Even the great Alleghany ridge, which ſeems to form a barrier between the eaſt and the weſt, is ſo cloſely approached on both ſides by navigable ſtreams, that the land carriage neceſſary in croſſing it extends, in ſome ſituations, to little more than 40 miles; and, when the increaſing population of the country ſhall have rendered ſuch a meaſure uſeful or neceſſary, it will probably be found not difficult to complete the communication by water by the aid of artificial canals.

425 Face of the country. With regard to the general face of the country within the territory of the United States, it is very various. We have already ſtated, that a great chain of mountains runs from the ſtate of Georgia northward, parallel to the Atlantic ocean, all the way to the great northern lakes. Theſe mountains are not ſolitary, or ſcattered in a confuſed manner; but are formed into different ridges, receiving various appellations in different ſtates. In Pennſylvania, Virginia, and North Carolina, the principal ridges, beginning on the eaſt, are called, firſt, the *Kittatinny* or *Blue mountain*, at the diſtance from 120 to 130 miles from the ſea. It is about 4000 feet high, and the country riſes from the ſea ſo ſlowly and gradually towards it, as to appear altogether level. Back from this firſt ridge, and nearly parallel to it, are the ridges called *Peters*, *Tuſcorara*, and *Nſcopek*; but theſe names are not in all places adhered to. Then follow the ridges called in Pennſylvania *Shareman's hills*, *Sidelong hills*, *Ragged*, *Great warriors*, *Erits and Wills mountains*; then the great Alleghany ridge which gives its name to the whole. Beyond it are the Laurel and Cheſnut ridges, and various others. Theſe ridges being parallel to each other are themſelves incapable of cultivation; but they are divided by rich plains of various breadth and of immenſe length, containing rivers of different degrees of magnitude. On the eaſt of the mountains, from the loweſt ridge to the ocean, the country, as already mentioned, deſcends very gradually; and in the ſouthern ſtates, for 150 miles from the ocean, is almoſt entirely level, conſiſting of a low flat country, apparently formed by ſand thrown up by the tides, and by particles of mud depoſited by the rivers in their ſpring floods. In the ſouthern ſtates, that is, thoſe to the ſouth of New York, the ſoil near the rivers is coarſe or fine, according to its diſtance from the mountains. Near them it contains a large mixture of coarſe ſand; but on the banks of the rivers towards the ſea, it conſolidates into a fine clay; which, when expoſed to the weather, falls down into a rich mould. In the ſtates of South Carolina and Georgia, for many miles from the ocean, when a pit is dug to the depth of 20 feet, every appearance of a ſalt marſh is uſually found, ſuch as marſh graſs, marſh mud, and brackiſh water. America.

Beyond the Alleghany mountains the country to the weſtward is irregular, broken, and variegated, but without great mountains. Various ſmall ridges, however, deſcend to the weſtward, between which flow the rivers that run into the Ohio. In ſome ſituations, particularly in the neighbourhood of Pittſburg, the variety of its ſurface is ſaid to render the country extremely beautiful.

Towards the north part of the ſtate of New York and in the New England ſtates, the country, different from the reſt of America, is rough and hilly, or even mountainous, though, upon the whole, their mountains are trifling when compared to thoſe in other parts of the world. Nor does it appear, that in almoſt any part of the United States, any ſuch thing is to be met with as mountains entirely rugged and barren, rearing their naked ſummits to the clouds. Even to the top of the Alleghany ridge the whole country is one waving foreſt, though the trees are of different ſize and ſpecies, according to the variety of ſoil upon which they ſtand. Notwithſtanding this general regularity of the ſurface of the country, to the eaſtward of the mountains, it is not deſtitute of objects which mark it to have undergone convulſions or changes. Of theſe we may mention one inſtance, being a curioſity worthy of attention, in the ſtate of Virginia, called *Natural Bridge* or *Rockbridge*. It is on the aſcent of a hill, which ſeems to have been cloven through its length by ſome great convulſion. The fiſſure juſt at the bridge is, by ſome admeaſurements, 270 feet deep, by others only 205. It is about 45 feet wide at the bottom, and 90 feet at the top. The breadth of the bridge in the middle is about 60 feet, but more at the ends, and the thickneſs of the maſs at the ſummit of the arch is about 40 feet. A part of this thickneſs conſiſts of a coat of earth which gives growth to many large trees. The reſidue, with the hill on both ſides, is one ſolid rock of limeſtone. Though the ſides of this bridge are provided in ſome places with a parapet of fixed rocks, yet few men have reſolution to advance, without creeping upon their hands and feet, to look over into the abyſs. To a ſpectator from the low ground, the arch appears beautiful and light as if

426 Natural bridge.

ſpringing

America. springing towards heaven; affording through it a pleaſing view of the mountains at five miles diſtance. The water paſſing under the bridge is called *Cedar Creek*, and the bridge itſelf is a part of a public road, as it affords a commodious paſſage acroſs a valley. The county, in which it is ſituated, is called from it the *County of Rockbridge*.

427 Caverns. In the ſame ſtate of Virginia, there are ſome caverns mentioned by the American geographer, Dr Morſe, which are not unworthy of notice as natural curioſities. The moſt noted is that called *Maddiſon's Cave*, on the north ſide of the mountains denominated the *Blue Ridge*, near the river Shenandoah. It is in a hill of about 200 feet perpendicular height, the aſcent of which on one ſide is ſo ſteep, that you may pitch a biſcuit from its ſummit into the water which waſhes its baſe. The entrance of the cave is in this ſide, about two-thirds of the way up. It extends into the earth about 300 feet, branching into ſubordinate caverns, ſometimes aſcending a little, but more generally deſcending, and at length terminates in two different places, at baſons of water of unknown extent, nearly on a level with the water of the river, of which, however, they do not ſeem to be refluent water, as they are never turbid, and do not riſe and fall in correſpondence with it, in ſeaſons of rain or drought. The vault of the cave is of ſolid limeſtone, from 20 to 40 and 50 feet high, through which water is continually percolating. This water has depoſited a cruſt, forming the appearance of an elegant drapery, on the ſides of the cave, and in dropping from the roof of the vault, generates, on that and on the baſe, ſtalactites of a conical form, ſome of which have met and formed maſſy columns.

There is another cave, in the North Ridge or North Mountain, which enters from the ſummit of the ridge. The deſcent is at firſt 30 or 40 feet perpendicular, as into a well, from whence the cave extends nearly horizontally 400 feet, preſerving a breadth of from 20 to 50 feet, and a height of from five to 12 feet. The heat of the cave is permanently at about 57° of Fahrenheit's thermometer.

In another ridge is a blowing cave in the ſide of a hill. It is about 100 feet diameter, and conſtantly emits a current of air, of ſuch force, as to keep the weeds proſtrate to the diſtance of 20 yards before it. The current is ſtrongeſt in froſt, and weakeſt after long rains. It probably communicates with a waterfall in the bowels of the earth, the daſhing of which generates the current of air, as we know that at the mines, called *Lead Hills*, in Scotland, for more than a century paſt, a ſmall waterfall at the bottom of a mine, has been uſed for the purpoſes of ventilation, the air generated from the water being conveyed in large tubes to any place where it is wanted. The blowing engine, called the *trompe*, which is uſed at ſome founderies, is alſo conſtructed on the ſame principle.

Rochefoucault's Travels, vol. ii. On the firſt of June 1796, a pretty remarkable phenomenon occurred in the vicinity of the town of Katſkill, in the ſtate of New York. The country in the neighbourhood is a ſucceſſion of little hills, or rather ſmall elevations, detached from each other, and only connected a little at the baſis. One of theſe hills, the neareſt to Katſkill Creek, and elevated about 100 feet above the level of the creek, ſuddenly ſuffered a ſinking of more than half its declivity. It might have meaſured about 150 feet, from its ſummit to the extremity of its baſe, following the line of inclination. A breadth of about 80 fathoms fell in, beginning at about 3 or 4 fathoms from the top. The ſame part gave way all of a ſudden, and fell ſo perpendicularly that a flock of ſheep feeding on the ſpot, went down with it without being overturned. The trunks of trees that remained on it in a half rotten ſtate, were neither unrooted, nor even inclined from their former direction, and now ſtand at the bottom of this chaſm, of above four acres in extent, in the ſame perpendicular poſition, and on the ſame ſoil. However, as there was not ſufficient ſpace for all this body of earth, which before had lain in a ſlope, to place itſelf horizontally between the two parts of the hill that have not quitted their ſtation, ſome parts are cracked, and as it were furrowed. But a more ſtriking circumſtance is, that the lower part of the hill, which has preſerved its former ſhape, has been puſhed and thrown forward by the ſinking part making itſelf room; that its baſe has advanced five or ſix fathoms beyond a ſmall rivulet, which before flowed at the diſtance of above 10 fathoms from it; and that it has even entirely ſtopped the courſe of its ſtream. The greateſt elevation of the chaſm, is about 50 or 60 feet: in its ſides it has diſcovered a blue earth, exhibiting all the characteriſtics of marl. In ſome of the ſtrata of the marl is found ſulphat of lime in minute cryſtals. The ſinking of the hill made ſo little noiſe, as not to be heard at the proprietor's houſe, at the diſtance of 300 fathoms, nor at the town, which is ſeparated from the hill only by the narrow ſtream of the creek.

428 Soil. The ſoil of the United States is not leſs various than in other countries. In the New England ſtates, in conſequence of the irregularity of the ſurface, rich and poor territory are interſperſed; but in the ſouthern ſtates, the limits of the fertile and of the more unproductive parts of the country are more diſtinctly marked. In general the ſoil is leſs deep and rich as the land approaches towards the mountains. The neighbourhood of the ſea conſiſts of great ſwamps, which being overflowed by the adjoining rivers, render the land unhealthy, though fit for the cultivation of rice and other valuable productions. Hence, as the firſt or loweſt ridges of mountains poſſeſs a conſiderable degree of fertility, they are better inhabited, becauſe more healthful than the low country. The long vallies between the ridges of the Alleghany mountains are everywhere fertile; but they are ſometimes very narrow. Beyond the mountains from Fort Pitt to the northern lakes in the back parts of the ſtate of New York, the country is fertile but moiſt, and lies low. Around Fort Pitt itſelf, as already mentioned, to a conſiderable diſtance, the country has a beautiful variegated aſpect. On the eaſtern ſide of the Ohio, however, below Fort Pitt, the country ſpeedily becomes rugged; and, for ſome hundred miles is little inhabited, to the borders of the fertile country of Kentucky, which in a few years has been ſettled, rendered populous, and aſſumed into the number of the United States. To the weſtward of the Ohio little is known, excepting that the country is covered with foreſts and abounds in game, which laſt circumſtance is always a ſufficient proof of the exiſtence of abundance of vegetable food, and conſequently of a fertile ſoil. In general, however, concerning

America. the whole American territory, it may be obſerved, that wherever the land is tolerably level, it muſt have been originally fertile. Being covered with foreſts, it received every year a bed of leaves ſpread over its ſurface; which, by continually rotting in ſucceſſion, have formed a vegetable mould of great fertility.

Mineral. The mineral productions of the territory of the United States are various, as in other parts of the world. The form of mountains, rocks, and beds of different minerals, is the ſame here as elſewhere. There are found different ſpecies of granite, combined and varied as in the mountains of Europe; innumerable kinds of ſchiſts, of limeſtones, more or leſs perfect, and minerals of almoſt every ſpecies. In general, however, it may be remarked, that American mineralogy offers few varieties for obſervation, as the ſame appearances usually pervade a conſiderable tract of country. The great mountains, that is to ſay, the moſt elevated, particularly the central ridge of the Alleghany, and the higheſt mountains of New England, are generally formed of granite. Thoſe of inferior altitude ſucceſſively exhibit ſchiſtus more or leſs perfect, ſlate, feldtſpath, calcareous ſtone, and ſome ſand ſtones of extreme hardneſs, and in a ſtate of great perfection. The whole territory to the eaſtward of the Alleghany mountains, appears to emboſom vaſt quantities of iron ore. The iron ore is of two kinds: one is capable of being manufactured into malleable iron, and is found in the mountains, and alſo in low barren hills. The other kind of iron is called *bog-ore*. It is produced in rich valleys. It is ſaid to conſiſt of iron united with the phoſphoric acid. In the furnace it yields iron of a hard brittle quality. In conſequence of the abundance of timber ſtill to be found in the country, a conſiderable number of iron mines are wrought to the eaſtward of the mountains; the fuel uſed in which conſiſts of charcoal. Their produce, however, is very trifling; none of them make more than to the amount of 1600 tons of pig iron annually, and about 150 of bar iron. The toughneſs of the caſt iron manufactured in ſome of the Virginian furnaces, is ſaid to be very remarkable. Pots and other utenſils, caſt thinner than uſual, of this iron, may be ſafely thrown into or out of the waggons in which they are tranſported. Salt pans made of it, and no longer wanted for that purpoſe, cannot be broken up to be melted again, unleſs previouſly drilled in many parts. Coal mines are wrought in the eaſtern part of Virginia; but, upon the whole, little coal is found in the United States to the eaſtward of the mountains, where iron ores are extremely abundant. On the contrary, to the weſtward of theſe mountains, iron has ſcarcely been perceived; whereas coal is in the greateſt plenty. In the fine country round Pitſburg, at the head of the Ohio, 320 miles weſt from Philadelphia, coal is not only extremely plentiful, but of a very ſuperior quality. A bed of it in that neighbourhood was on fire for about twenty years, but little damage appears to have been produced. Coal has been diſcovered in ſo many places to the eaſtward of the Ohio, as to produce an opinion, that the whole tract of country beyond the mountains, from Pitſburg to the Miſſiſſippi, abounds with it. Immenſe beds of limeſtone rock are to be found in the moſt eaſtern tract of mountains. Below theſe mountains it ſeldom appears; but in Virginia, from the Blue Ridge weſtward, the whole country ſeems to be founded on a rock of limeſtone, beſides great quantities on the ſurface both looſe and fixed. It is formed into beds which range as the mountains and ſea coaſt do, from ſouth-weſt to north-eaſt; the laminæ of each bed declining from the horizon towards a paralleliſm with the axis of the earth. In ſome inſtances, however, but rarely, they are found perpendicular and even reclining the other way. But ſuch caſes are always attended with ſigns of convulſion, or other circumſtances of ſingularity. Limeſtone is alſo found on the Miſſiſſippi and Ohio. Indeed that mineral appears to pervade the whole length of the ridges of the Alleghany mountains; and towards the lakes Erie and Ontario, the whole country reſts upon limeſtone. It is not found on the high ridges themſelves of the Alleghany mountains; but it occupies the fertile valleys between them, and is ſeen at the banks of the rivers which paſs along theſe valleys. It ſometimes appears to the eaſtward, in the form of very fine marble, chiefly coloured, quarries of which are wrought to adorn the houſes of the wealthier citizens in the great towns. America.

Copper has been found in a variety of ſituations to the eaſtward of the mountains. At the diſtance of eight or ten miles from New York is a pretty rich copper mine. The ore is irregularly ſcattered through a kind of ſand-ſtone, often reſembling grit, and ſometimes the pudding-ſtone. It yields from 60 to 70 pounds of fine copper per cwt. Previous to the revolution it uſed to be carried to England, where it bore a higher price than any other ore of the ſame metal. The mine has been ſeveral times wrought, abandoned, and reſumed. Some workmen, moſtly Germans, were brought over from Europe for the purpoſe within theſe few years, and paid from 15 to 20 dollars per month. But the high price of labour and the difficulty of obtaining well executed machinery, impoſe in the United States great difficulties upon all mineralogical enterpriſes. At New Brunſwick in New Jerſey, a copper mine was at one time wrought, in which large quantities of virgin copper were diſcovered. In particular, in the year 1754, two lumps of virgin copper are ſaid to have been found, which together weighed 1900 pounds. In the courſe of a few years preceding, within a quarter of a mile of New Brunſwick, ſeveral pieces of virgin copper, from five to thirty pounds weight, in whole upwards of 200 pounds, were even turned up in a field by the plough; but the mine has ceaſed to be wrought, and the ſearch for the metal diſcontinued.

Conſiderable quantities of black lead are found, and occaſionally taken for uſe from a place, called *Winterham*, in the county of Amelia in Virginia. No work is eſtabliſhed there; but thoſe who want the mineral go and procure it for themſelves.

To the weſtward of the mountains ſome lead mines have been found, which will probably hereafter become valuable. In the weſtern part of the ſtate of Virginia, one mine has been for ſome time wrought by the public. The metal is mixed ſometimes with earth and ſometimes with rock, which requires the force of gunpowder to open it. The proportions yielded are from 50 to 80 pounds of pure metal, from 100 pounds of worked ore. The moſt common proportion is that of 60 to 100 pounds. The lead contains a portion of ſilver, too ſmall to be worth ſeparation under any proceſs known

to

America. to the American workmen. The veins are at times very flattering, and afterwards disappear suddenly and totally. They enter the side of the hill and proceed horizontally. Only about 30 labourers have been employed, and they cultivate their own corn. They have produced 60 tons of lead in a year, but the general quantity is from 20 to 25 tons. Lead mines are also said to have been discovered on the upper parts of the Mississippi, extending over a great length of country; but they are not wrought. Silver mines are also said to have been found in the territory of New York, and in the western country, particularly on the Wabash river; but they are too poor to be worth working. In the territory of New York zinc has been found, and likewise manganese, with various kinds of pyrites; also petrified wood, plaster of Paris, talc, crystals of various kinds and colours, asbestos, and several other fossils; also a small black stone, which vitrifies with little heat, and makes good glass.—A kind of mica, called by the Americans *isinglass*, has also been found, which is transparent, and capable of being divided into thin laminæ or sheets, which may be used as a convenient substitute for window glass. Amethysts have been frequently found in Virginia; and even the emerald is not unknown. In the north mountains are immense bodies of schist, containing impressions of shells of various kinds. Petrified shells are also found in very elevated situations at the first sources of the Kentucky river. On the banks of Savannah river in South Carolina, about 90 miles from the sea in a direct line, and 150 or 200 as the river runs, there is a remarkable collection of oyster shells of an uncommon size. They run in a north-east and south-west direction, nearly parallel with the sea coast, in three distinct ridges, which together occupy a space of seven miles in breadth. Such a phenomenon cannot easily be accounted for in any other way than by supposing the whole of this flat country to have been at one period an appendage of the ocean.

430 Sulphur and nitre found in the western territory.

Sulphur is said to be found in several places of the western territory; and nitre is obtained, as in Spain, by lixiviating the fat earth that is found upon the banks of the rivers. But the most valuable mineral that has hitherto been found in Kentucky and other parts of the western territory, consists of the salt that is obtained by the evaporation of the water of certain springs. Such springs appear to be unknown to the eastward of the mountains; but they abound upon the Ohio, where they are more necessary on account of the great distance from the sea. They were discovered in the following curious manner:—The first inhabitants found, that the wild beasts of the forest, especially the buffaloes and deer, were accustomed to come in great crowds to certain spots, and there to employ themselves, apparently with much pleasure, in licking the ground. On examining the soil at these places, it was found to possess a considerable impregnation of sea salt, of which almost all animals that feed upon vegetables are known to be fond. The want of this commodity was a source of much distress to the first emigrants to Kentucky, and was one of the chief obstacles to the settlement of the country; but the example of the inferior animals, indicated a mode of relieving their wants. The spots frequented by the buffaloes were called *licks*, and at every lick it was found that at

431 Salt springs, or licks, in Kentucky.

of from five to ten feet is impregnated with common salt; so that by digging wells salt water might be obtained, from which salt can be extracted by evaporation. At least 12 of these licks, or salt springs, have been found in the new state of Kentucky, the principal of which are, Bullet's Lick, or Salt River, 25 miles from the mouth of the Ohio; Drennon's Lick, [illegible] mile and a half from the mouth of the Kentucky. On what is called *Licking Creek* there are two springs, called the *Upper* and *Lower Blue Licks*; and there is one called *Great Bone Lick*, from the bones of animals of a monstrous size, of a species that no longer exists, that have been found there and in the neighbourhood. The water of the two first springs is by no means so strong as the rest. It requires nearly 200 gallons to make one bushel of salt, which is more by one half than would be wanted of sea water in the same latitude to produce that quantity. In consequence, however, of the abundance of fuel that exists in a country where the finest timber is still considered as a nuisance, salt is here manufactured in plenty, and is sold tolerably cheap.

431 Springs.

Various springs of water impregnated with other mineral ingredients have been found in the territory of the United States, some of which are much frequented by valetudinarians. In 1704, a sulphureous spring was discovered at a few yards distance from the banks of the river Chippaway, which falls into the Niagara, a little above the falls. On the approach of a firebrand, the vapour or steam kindles, assumes the form of burning spirit of wine, and burns down to the bottom. In the state of New York, the springs of Saratoga are much noted. They are eight or nine in number, situated on the margin of a morass, about twelve miles west from the confluence of a stream called *Fish Creek* with Hudson's river. They are surrounded by a limestone rock, apparently formed of petrifactions deposited by the water. One of the springs particularly attracts attention: It sometimes rises above the earth in the form of a pyramid. The aperture in the top which discovers the water is perfectly cylindrical, about nine inches diameter. In this the water is about twelve inches below the top, except at its annual discharge, which is commonly at the beginning of summer. At all times it appears to be in as great agitation as if boiling in a pot, although it is extremely cold. The same appearances obtain in the other springs, except that the surrounding rocks are of different figures, and the water flows regularly from them. The air which rises in the springs, and causes the ebullition, appears to consist in part at least of carbonic acid gas, with which the water is strongly impregnated, as well as with lime, dissolved by the acid. It also contains a chalybeate impregnation. In the chain of the Alleghany mountains called *Laurel Ridge*, about latitude 36°, there is a spring of water 30 feet deep, very cold, and as blue as indigo; but the nature of the impregnation has not been ascertained.

There is in Pennsylvania, beyond the mountains, a stream called *Oil Creek*, which flows into the Alleghany river. It issues from a spring, on the top of which floats an oil similar to that called *Barbadoes tar*, and from which one man may gather several gallons in a day. The troops [illegible] the western post [illegible] at this spring, collected some of the oil, and bathed their

Mineral springs.

America. their joints with it. This gave them great relief from the rheumatic complaints with which they were affected. The waters, of which the troops drank freely, operated as a gentle purge.

In the county of Auguſta in Virginia, near the ſources of James's river, are two ſprings, diſtinguiſhed by the appellation of *Warm* and *Hot*. They are eight miles diſtant from each other, and are ſtrongly impregnated with ſulphur. They are ſaid to be uſeful for rheumatic, and ſome other complaints. The *warm ſpring* iſſues with a very bold ſtream, ſufficient to work a griſt mill, and to keep the waters of its baſon, which is 30 feet in diameter, at blood heat, or 96° of Fahrenheit. The *hot ſpring* is much ſmaller, and has been ſo hot as to boil an egg. Some believe its degree of heat to be leſſened. It raiſes the mercury in Fahrenheit's thermometer to 112°. It ſometimes relieves where the warm ſpring fails. A fountain of common water iſſuing near its margin gives it a ſingular appearance. What are called the *ſweet ſprings* are in the county of Botetourt in the ſame ſtate, at the eaſtern foot of the Alleghany, 42 miles from the warm ſprings. They are quite cold, like common water, and their nature is little known; but all the three ſorts of ſprings are much frequented. On the Potowmack, and on York river, are alſo ſome ſprings, ſuppoſed to be medicinal; but in favour of whoſe virtues little is known.

In the low grounds of the river called Great Kanhaway, 67 miles above the mouth, is a hole in the earth, of the capacity of thirty or forty gallons, from which iſſues conſtantly a bituminous vapour, in ſo ſtrong a current as to give to the ſand about its orifice the motion which it has in a boiling ſpring. On preſenting a lighted candle or torch within 18 inches of the hole, it flames up in a column of 18 inches diameter, and four or five feet in height, which ſometimes burns out within 20 minutes, and at other times has been known to continue three days, and then has been left ſtill burning. The flame is unſteady, of the denſity of that of burning ſpirits, and ſmells like burning pit-coal. Water ſometimes collects in the baſon, which is remarkably cold, and is kept in ebullition by the vapour iſſuing through it. If the vapour be fired in that ſtate, the water ſoon becomes ſo warm that the hand cannot bear it, and evaporates wholly in a ſhort time. On Sandy River there is a ſimilar hole that ſends forth a bituminous vapour, the flame of which is a column of about twelve inches diameter and three feet high.

In the ſtate of Georgia, in the county of Wilkes, about a mile and a half from the town of Waſhington, a ſpring riſes from a hollow tree, four or five feet in length. The inſide of the tree is incruſted with a coat of nitre an inch thick, and the leaves round the ſpring are incruſted with a ſubſtance as white as ſnow, which has not been analyzed. It is recommended for ſcurvy and ſcrophulous diſorders.

434 Vegetables.

The vegetable kingdom in the United States of America is ſo extremely rich, that even an enumeration of its remarkable objects would greatly exceed the bounds which we have here preſcribed to ourſelves. Indeed, it does not appear that, excepting the ſugar cane, any valuable vegetable production is known which cannot be reared within ſome part of the territory of the ſtates. With regard to the natural growth of theſe countries, it conſiſts of an endleſs variety of trees and ſhrubs, and leſſer plants. Each tract of different ſoil is uſually diſtinguiſhed by its peculiar vegetation, and is pronounced good, middling, or bad, from the ſpecies of trees which it produces; and one ſpecies generally predominating in each ſoil, has produced the deſcriptive names of *Oak Land*, *Birch*, *Beech*, and *Chefnut Lands*, *Pine Barren Land*, *Maple*, *Aſh*, and *Cedar Swamps*. Intermingled with theſe, which in the New England ſtates are the predominating ſpecies, we find in that northern territory others, as walnut, firs, elm, hemlock, mooſe wood, ſaſſafras, and many others. Walnut and cheſnut trees indicate the beſt lands; beech and oak grow upon the ſecond; the fir and pitch pine upon the third; barberry and other buſhes upon lands of the next quality; and marſhy ſhrubs upon the worſt. Along with theſe are found a variety of flowering trees and ſhrubs, including all thoſe known in Europe. Among the fruits which grow wild in all the ſtates are ſeveral kinds of grapes, which are ſmall, ſour, and thick ſkinned. The vines on which they grow are very luxuriant, and often overſpread the higheſt trees of the foreſt. They are extremely tough, and poſſeſs almoſt the ſtrength of cordage. On the more fertile ſoils, the largeſt trees ſeldom puſh their roots into the earth beyond the depth of one foot, being no doubt fed by the rich mould which is formed on the ſurface by the perpetual ſhedding of the leaves and the rotting of the graſs. In the northern ſtates, the fragrance of the woods from flowering ſhrubs and trees is not ſo remarkable as in the ſouth; nor is the timber ſo valuable. In South Carolina, indeed, the luxuriance of the woods ſtands unrivalled. There are 18 different ſpecies of oak, particularly the live oak, palmetto or cabbage tree, cucumber tree, deciduous cypreſs, liquid amber, hiccory, &c.; in ſhort, all the ſpecies of trees which are ſo exceſſively dear in Europe, ten of which are planted to ſave one, for which both ſituation and ſoil are carefully ſelected, and which yet never attain any conſiderable height, are here the natural produce of the country, and vegetate with the utmoſt rapidity. Equally ſtriking to Europeans is the pleaſing luxuriance of ſhrubs, plants, and various kinds of graſs; moſt of which diffuſe an exquiſite fragrance.

Of the ſmaller vegetables, maize, or Indian corn, is a native of America. It agrees with all climates, from the equator to latitude 45°, but flouriſhes beſt between latitudes 30° and 40°. The wild rice is a grain which grows in great plenty in ſome of the interior parts of the ſtates, and ſeems the moſt valuable of the ſpontaneous productions of the country. It grows in the water, where it is about two feet deep, with a rich muddy bottom. In its ſtalk, ears, and manner of growing, it very much reſembles oats. It is gathered by the Indians in the following manner: About the time that it begins to turn from its milky ſtate, and to ripen, they run their canoes into the midſt of it, and, tying bunches of it together, juſt below the ears, they leave it in this ſituation for three or four weeks, till it is perfectly ripe. At the end of this time, commonly about the laſt of September, they return to the river, and, placing their canoes cloſe to the bunches of rice, in ſuch a poſition as to receive the grain when it falls, they

America. they beat it out with pieces of wood. Thereafter they dry it with ſmoke, and laſtly tread or rub off the outſide huſk; after which it is fit for uſe.

435 American birds.

We have already enumerated the American quadrupeds, and have ſeen, that of theſe a conſiderable number is peculiar to America. Upwards of 130 American birds have been enumerated, and many of them deſcribed by Cateſby, Jefferſon, and Carver. The following catalogue will ſhow the aſtoniſhing variety that exiſts in the American ſtates, of this beautiful part of the creation:

Blackbird.
Razor-billed do.
Baltimore bird.
Baſtard Baltimore.
Blue bird.
Buzzard.
Blue jay.
Blue groſbeak.
Brown bittern.
Creſted do.
Small do.
Booby.
Great booby.
Blue Peter.
Bullfinch.
Bald coot.
Cutwater.
White curlew.
Cat bird.
Cuckow.
Crow.
Cowpen bird.
Chattering plover or kildee.
Crane or blue heron.
Yellow-breaſted chat.
Cormorant.
Hooping crane.
Pine creeper.
Yellow-throated creeper.
Dove.
Ground dove.
Duck.
Ilathera duck.
Round-creſted do.
Sheldrake or canvaſs do.
Buffels-head do.
Spoonbill do.
Summer do.
Blackhead do.
Blue-winged ſhoveller.
Little brown duck.
Sprigtail.
White-faced teal.
Blue-winged teal.
Pied-bill dobchick.
Eagle.
Bald eagle.
Flamingo.
Fieldfare of Carolina, or robin.
Purple finch.
Bahama finch
American goldfinch.
Painted finch.
Creſted fly-catcher.
Black-cap do.
Little brown do.
Red-eyed do.
Finch creeper.
Storm finch.
Goatſucker of Carolina.
Gull.
Laughing gull.
Gooſe.
Canada gooſe.
Hawk.
Fiſhing hawk.
Pigeon do.
Night do.
Swallow-tailed do.
Hangbird.
Heron.
Little white heron.
Heath cock.
Humming bird.
Purple jackdaw or crow blackbird.
King bird.
Kingfiſher.
Loon.
Lark.
Large lark.
Blue linnet.
Mock bird.
Mow bird.
Purple martin.
Nightingale.
Noddy.
Nuthatch.
Oyſter-catcher.
Owl.
Screech owl.
American partridge or quail.
Pheaſant or mountain partridge.
Water pheaſant.
Pelican.
Water pelican.
Pigeon of paſſage.
White-crowned pigeon.
Parrot of paradiſe.
Paroquet of Carolina.
Raven.
Rice bird.
Red bird.
Summer red bird.
Swan.
Soree.
Snipe.
Redſtart.
Red-winged ſtarling.
Swallow.
Chimney do.
Snow bird.
Little ſparrow.
Bahama do.
Stork.
Turkey.
Wild turkey.
Tyrant.
Creſted titmouſe.
Yellow do.
Bahama do.
Hooded do.
Yellow rump.
Towhe bird. America.
Red thruſh.
Fox-coloured thruſh.
Little thruſh.
Tropic bird.
Turtle of Carolina.
Water wagtail.
Water hen.
Water witch.
Wakon bird.
Whetſaw.
Large white-billed woodpecker.
Large red-creſted do.
Gold-winged do.
Red-bellied do.
Hairy do.
Red-headed do.
Yellow-bellied do.
Smalleſt ſpotted do.
Wren.

Of all theſe, it has been remarked, that the birds of America generally exceed thoſe of Europe in the beauty of their plumage; but are much inferior to them in the melody of their notes. The buzzard, commonly called the turkey buzzard, from its reſemblance to a turkey in plumage and ſhape, is very common all over South Carolina. It appears, that the police of Charleſtown is extremely deficient in thoſe meaſures which ſhould not be neglected in a populous town, in ſo hot a climate. Hence the bodies of dead animals are frequently left expoſed in the neighbourhood, together with the refuſe of ſlaughterhouſes. But the voracity of the turkey buzzard alleviates the effects of this negligence. It ſpeedily devours every thing, and leaves only the bones of any carcaſe that it finds. Hence it is accounted a kind of ſacred bird: no law has been enacted prohibiting it to be killed; but among the whole inhabitants of the town, the public opinion ſufficiently protects its ſafety. 436 The Turkey buzzard.

In all parts of the United States, conſiderable numbers of ſnakes are found. But they are neither ſo numerous nor ſo venomous in the northern as in the ſouthern ſtates. The following is given as a liſt of them. 437 American ſnakes.

Rattle ſnake.
Small rattle ſnake.
Yellow rattle ſnake.
Water viper.
Black do.
Brown do.
Copper-bellied ſnake.
Bluiſh-green do.
Black do.
Ribbon do.
Spotted ribbon do.
Chain do.
Joint do.
Green-ſpotted do.
Coachwhip do.
Corn ſnake.
Hognoſe do.
Houſe do.
Green do.
Wampum do.
Glaſs do.
Bead do.
Wall or houſe adder.
Striped or garter ſnake.
Water do.
Hiſſing do.
Thorn-tailed do.
Speckled do.
Ring do.
Two-headed do.

The joint ſnake is a curioſity. Its ſkin is as hard as parchment, and as ſmooth as glaſs. It is beautifully 438 The joint ſnake.

ſtriped

America. striped with black and white. Its joints are ſo few and ſtiff, that it can hardly bend itſelf into the form of a hoop. When ſtruck, it breaks like a pipe's ſtem, and with a whip may be broken from the tail to the bowels into pieces not an inch long, without producing the leaſt tincture of blood. It is not venomous. It is not known whether the two-headed ſnake be a diſtinct ſpecies, or only a monſtrous production, very few of them having ever been ſeen. But of all the
439 Rattle ſnake. American ſnakes, the rattle ſnake is the chief, as being the moſt frequent and the moſt dangerous. It is a peaceful animal, however, and never bites but on being irritated. In the northern ſtates it is little regarded, and its bite ſeems not to be fatal. "We found, (ſays the duke de la Rochefoucault Liancourt), a young man, who about ſix weeks before had been bitten on the knee by a rattle ſnake, while he was fiſhing on the banks of Lake Cauandaqua. At firſt he did not feel much pain in the part affected; but an hour afterwards a ſwelling appeared, which gradually extended all along the leg to the foot, and both became ſo ſtiff that he was unable to move them. A cure was effected within the ſpace of only ſix days by the juice of ſnake-root laid on the wound and ſwelling, as a poultice, mixed with milk, together with a few drops of that juice, pure and unmixed, taken internally. Inſtances of ſuch bites occur but very ſeldom, and only, it ſeems, when the animal has been touched; otherwiſe it conſtantly retires, and may be killed by a blow with the ſlendereſt ſtick." But in the ſouthern ſtates, particularly in South Carolina, the inhabitants are more afraid of theſe animals than in New York or Pennſylvania; as inſtances are known in that ſouthern climate of people having died a quarter of an hour after they were bitten by the rattle ſnake. The juice of *plantago Virginiana Linn.* or the root and branches of mahuba bruiſed, are the remedies moſt commonly applied. Either of theſe plants is ſufficient; but they are deemed more efficacious when they are applied jointly. A tobacco leaf ſteeped in rum, or a ſingle leaf of one of the above plants, takes off the pain and ſwelling. Cæſar, a negro, diſcovered this cure in South Carolina; he proved its efficacy to the aſſembly of the ſtates, in 1780, by cauſing a rattle ſnake to bite him; and obtained for this arcanum his liberty, and a penſion of 100 guineas a-year.

440 Inſects. An aſtoniſhing variety of inſects is found in the United States. Of theſe, during the ſummer, the muſketo is the moſt troubleſome. In the back parts of the ſtate of New York, the lands are frequently viſited by a ſpecies of locuſts which fix chiefly on the trees, and conſume the leaves. They are ſo extremely numerous, that every attempt to deſtroy or remove them is apparently fruitleſs. Flies, likewiſe, in moiſt ſituations, are very troubleſome, being found in ſuch prodigious ſwarms, eſpecially about noon, that the farmers are obliged to keep large fires, burning near their houſes, where the cattle find ſhelter from theſe tormentors, till the cool of the evening, when the latter diſappear, and retire into the woods.

441 Bees. Bees are found in the woods in ſwarms, which produce large quantities of honey, of different qualities, according to the kinds of flowering ſhrubs and trees that prevail in the neighbourhood. It is ſaid, however, that the wild bee is moſt usually found in the vicinity of cultivated places, where a part at leaſt of the timber has been cut down, and that hence, when the ſavages perceive a ſwarm of bees, they ſay, that it is time for them to remove, as the approaches of cultivation not only bring white men, who are always in ſome meaſure their enemies, but alſo tend to narrow their hunting grounds. The planters not only rear enough of bees to ſupply themſelves with honey of an excellent quality, but conſiderable quantities are brought to the coaſt for exportation. America.

442 Poiſonous honey. *Phil. Soph. Mag.* March 1802. An account has been given by an American phyſician, Dr Benjamin Smith Barton, of a poiſonous or injurious kind of honey collected by bees in the territory of the United States, which is, perhaps, worthy of attention both for philoſophical and for commercial reaſons. "The honey which I call *deleterious*, (ſays he) or *poiſonous honey*, produces, as far as I have learned, the following ſymptoms, viz. In the beginning a dimneſs of ſight, or vertigo ſucceeded by a delirium, which is ſometimes mild and pleaſant, and ſometimes ferocious, ebriety, pain in the ſtomach and inteſtines, profuſe perſpiration, foaming at the mouth, vomiting and purging, and, in a few inſtances, death. In ſome perſons a vomiting is the firſt effect of the poiſon. When this is the caſe, it is probable that the perſons ſuffer much leſs from the honey than when no vomiting is induced. Sometimes the honey has been obſerved to produce a temporary palſy of the limbs: an effect which I have remarked in animals that have eaten of one of thoſe very vegetables, the *kalmia latifolia*, from whoſe flowers the bees obtain a pernicious honey. Death is very ſeldom the conſequence of eating this kind of honey. The violent impreſſion which it makes upon the ſtomach and inteſtines often induces an early vomiting or purging, which are both favourable to the ſpeedy recovery of the patient. The fever which it excites is frequently relieved, in a ſhort time, by the profuſe perſpiration, and perhaps by the foaming at the mouth. I may add, that, as the human conſtitution reſiſts to an aſtoniſhing degree the effects of the narcotic or other poiſonous vegetables that are beſt known to us, ſo we need not wonder, that it alſo reſiſts the effects of the deleterious honey that is produced from ſuch vegetables.

"It deſerves to be mentioned, that the honey which is formed by two different hives of bees in the ſame tree, or at a little diſtance from each other, often poſſeſſes the moſt oppoſite properties. Nay, the honey from the ſame individual combs is ſometimes not leſs different in taſte, in colour, and in its effects. Thus one ſtratum or portion of it may be eaten without the leaſt inconvenience, whilſt that which is immediately adjacent to it ſhall occaſion the ſeveral effects which I have juſt enumerated. I have taken ſome pains to learn what are the ſigns by which the deleterious honey may at firſt view be diſtinguiſhed from innocent honey. I am informed, that there is no difficulty in the matter.

"The poiſonous honey is ſaid by ſome to be of a crimſon colour; by others, it is ſaid to be of a reddiſh brown colour, and of a thicker conſiſtence than common innocent honey. Theſe are the ſigns by which I am told the moſt experienced hunters in the ſouthern parts of North America are enabled to diſtinguiſh pernicious from innocent honey."

Dr

America. Dr Barton, however, juſtly doubts the infallibility of theſe ſigns, ſo far as they depend upon the colour of the honey, as Mr Bruce found honey red like blood at Dixan in Abyſſinia, which he does not ſay was poiſonous; and the honey collected in Scotland from the flowers of the *erica*, or blooming heather, is uſually of a dirty brown colour, though it was never known to poſſeſs any noxious property. He proceeds to ſtate, that a friend of his, Mr William Bartram, who has written upon the natural productions of North America, informed him, that "in the Carolinas and Floridas the poiſonous honey is often ſo ſimilar in colour, taſte, and odour, to the common or innocent honey, that the former cannot be diſtinguiſhed from the latter. It is owing, he ſays, to this circumſtance, that ſo many accidents daily happen from the uſe of the wild honey. He was informed, that it is experience alone which enables the hunters and others to determine whether the honey which they find in the woods be poiſonous or innocent. They have obſerved that the injurious effects manifeſt themſelves, in a ſhort time, after the honey is taken into the ſtomach. They are accuſtomed, therefore, to eat a ſmall quantity before they venture to ſatisfy their appetite. Should this produce any diſagreeable effects, they do not think it prudent to continue the uſe of it: but, if in a ſhort time it ſhould occaſion no inconvenience, they think they may, with perfect ſafety, indulge their appetite to the full.

"I have been informed, that the poiſonous honey, by boiling and ſtraining, may be rendered as innocent as any honey whatever. It is likewiſe ſaid, that, by long keeping, it becomes harmleſs. It is poiſonous to dogs as well as to men. Hitherto I have not been able to obtain any certain information concerning the means to be purſued in the treatment of perſons labouring under the effects of the poiſonous honey. It is ſaid, that the Indians and ſome of the whites uſe cold bathing with advantage. As the effects produced by this honey are ſimilar to thoſe produced by ſeveral narcotic vegetables that are well known to us; ſuch as opium, *hyoſciamus niger* or henbane, *datura ſtramonium* or thorn-apple, &c. it is probable that the ſame means of treatment will apply to both caſes. In South Carolina, Georgia, and the two Floridas, but more eſpecially in Eaſt Florida, the inſtances of injury from the eating of wild honey are more numerous than in any other parts of North America that are known to us. There is a tract of country, included between the rivers St Illa and St Mary's in Eaſt Florida, that is remarkable for immenſe numbers of bees. Theſe inſects, which were originally introduced into Florida by the Spaniards, have increaſed into innumerable ſwarms, from the facility with which they procure their food, in, perhaps, the richeſt flowered country of North America. In this tract of country the alarming effects of the wild honey are often experienced by the ſettlers, by wandering hunters, and by ſavages.

"It is highly probable that this poiſonous honey is procured from a conſiderable number of the flowers of the countries which I have mentioned. A complete liſt of theſe flowers would be acceptable; but ſuch a liſt it will be difficult to procure at preſent. Meanwhile I am happy to have it in my power to mention ſome of the vegetables from whoſe flowers the bees extract a deleterious honey, not only in the country between the St Illa and St Mary's, but alſo in ſome other parts of North America. Theſe vegetables, are the *kalmia anguſtifolia* and *latifolia* of Linnæus, the *kalmia hirſuta* of Walter, the *andromeda mariana*, and ſome other ſpecies of this genus.

"Every American has heard of the poiſonous properties of the *kalmia anguſtifolia* and *latifolia*. The former of theſe plants is known in the United States by the names of *dwarf laurel*, *ivy*, *lambkill*, &c. It has long been known that its leaves, when eaten by ſheep, prove fatal to them. The following fact likewiſe will ſhew, that the flowers alſo are endued with a poiſonous property. About 20 years ſince, a party of young men, ſolicited by the proſpect of gain, moved with a few hives of bees from Pennſylvania into the Jerſeys. They were induced to believe, that the ſavannahs of this latter country were very favourable to the increaſe of their bees, and conſequently to the making of honey. They accordingly placed their hives in the midſt of theſe ſavannahs, which were finely painted with the flowers of the *kalmia anguſtifolia*. The bees increaſed prodigiouſly; and it was evident, that the principal part of the honey which they made was obtained from the flowers of the plant which I have juſt mentioned. I cannot learn that there was any thing uncommon in the appearance of the honey; but all the adventurers, who ate of it, became intoxicated to a great degree. From this experiment they were ſenſible that it would not be prudent to ſell their honey; but, unwilling to loſe all their labour, they made the honey into the drink well known by the name of *metheglin*, ſuppoſing that the intoxicating quality, which had reſided in the honey, would be loſt in the metheglin. In this reſpect, however, they were miſtaken: the drink alſo intoxicated them, after which they removed their hives. In North Carolina, this ſpecies of kalmia, and the *andromeda mariana* are ſuppoſed to be the principal vegetables from which the bees prepare the poiſonous honey that is common in that part of the United States.

"The *kalmia latifolia*, known in the United States by the names of *laurel*, *great laurel*, *winter green*, *ſpoon haunch*, *ſpoon wood*, &c. is alſo a poiſon. Its leaves indeed are eaten with impunity by the deer, and by the round-horned elk; but they are poiſonous to ſheep, to horned cattle, and to horſes. In the former of theſe animals they produce convulſions, foaming at the mouth, and death. Many of General Braddock's horſes were deſtroyed by eating the leaves and the twigs of this ſhrub in the month of June 1755, a few days before this unfortunate general's defeat and death. In the ſevere winter of the years 1790 and 1791, there appeared to be ſuch unequivocal reaſons for believing that ſeveral perſons in Philadelphia had died in conſequence of their having eaten our pheaſant, in whoſe crops the leaves and buds of the *kalmia latifolia* were found, that the mayor of the city thought it prudent, and his duty, to warn the people againſt the uſe of this bird by a public proclamation. I know, that by many perſons, eſpecially by ſome lovers of pheaſant fleſh, the circumſtance juſt mentioned was ſuppoſed to be deſtitute of foundation: but the foundation was a ſolid one. This might be ſhown by ſeveral well authenticated facts. It is ſufficient for my preſent purpoſe to obſerve,

America. observe, that the collection of a deleterious honey from the flowers of this species of kalmia gives some countenance to the opinion, that the flesh of pheasants that had eaten the leaves and the buds of this plant may have been impregnated with a pernicious quality.

"In Georgia and Florida the *kalmia hirsuta* is supposed to be the principal vegetable from which the deleterious honey in those parts of our continent is procured. The andromeda mariana or broad-leaved moorwort, is a very common plant in many parts of North America. The leaves are poisonous to sheep. The petioli or footstalks of the leaves, and the seeds within the seed-vessel, are covered with a brown powder similar to that of the kalmia. This powder, applied to the nostrils, occasions violent sneezing. From the flowers of this plant the bees extract considerable quantities of honey; and it deserves to be mentioned, that this honey, as well as that obtained from some other American species of andromeda, has frequently the very smell of the flowers from which it is obtained."

In addition to the above plants, from whose flowers the bees are known to obtain poisonous honey, the same writer mentions some others which are suspected to be dangerous, as the *rhododendron maximum* or Pennsylvania mountain laurel. The seeds of this plant and the footstalks of the leaves are covered, like some of the andromedæ and kalmiæ, with a brown powder which excites sneezing; and, it is singular, that Dioscorides mentions sneezing as one of the symptoms produced by honey made about Heraclea Pontica. The *azalea nudiflora*, called in the United States the *wild honeysuckle*, is also suspected of producing poisonous honey. A species of this genus, the *azalea pontica* of Linnæus, is supposed to be the *ogolethron* of Pliny, who mentions it as the plant from which the poisonous honey about Heraclea Pontica is prepared. The datura stramonium, called in America *James-town weed*, *gymsin*, *stink-weed*, or *French chesnut*, produces in the tube of its flower a considerable quantity of honey, which is suspected to be of a bad quality; because the plant itself is known to possess poisonous properties. Upon the whole, from what is known upon the subject in America, Dr Barton is led to suspect, that every flower that is poisonous to man may produce a honey injurious to man, since the properties of the fluid are so dependent upon the properties of the plant from which it is produced. Hence he thinks, that there is more of poetry than philosophy in the following lines of Pope.

> In the nice bee, what sense so subtly true,
> From poisonous herbs extracts the healing dew?
> *Essay on Man.*

443 The kaiman. The *kaiman*, a species of the alligator, or crocodile, is also found in the southern rivers of the United States. Some of the kaimans are of so monstrous a size as to exceed five yards in length. They devour all living animals that they can catch. They are fond of the flesh of hogs and dogs. When basking on the shore, they keep their huge mouths wide open, till they are filled with musquetoes, flies, and other insects; when they suddenly shut their jaws, and swallow their prey. They are great destroyers of fish in the rivers and creeks, which they catch with the same address. Eight or ten of them lie at the mouth of the river or creek, whilst others go to a distance up the river, and chase the fish downward; by which means, none of any bigness escape them. They are said, however, to remain torpid during the winter in dens which they find in the banks of the rivers, having previously swallowed a large number of pine knots, which forms their only sustenance till the period of their revival or wakening. The kaiman seldom touches a man, however near it may lie to him. It constantly flees when at land; but in the water it is fiercer, and has been known to bite off the leg of a person bathing. It more frequently attacks dogs. Sometimes when hounds, in pursuit of a stag, swim through the water, the kaimans seize both hounds and deer, and pull them down to the bottom, without their ever appearing again. The scales with which they are coated render them invulnerable, unless the wound be inflicted in the interstices of the scales, or at the extremities. America.

444 Climate. The climate of the great territory belonging to the United States, must necessarily be various, in consequence of the difference of latitude and soil that takes place in it. The snow covers Vermont and the province of Maine, during five or six months of the year; and the winter there lasts seven months, while there is hardly any winter in South Carolina, and still less in Georgia. Should any snow fall in the latter of these states, it does not remain two days upon the ground. The sudden variation of temperature which frequently occurs, is the most remarkable characteristic of the climate of the whole states. It is usual to see the thermometer rise or fall 25° of Fahrenheit's scale in 24 hours. In April 1796, it fell in 12 hours from the 77th degree of Fahrenheit to 44½°, and this observation was made at Wilmington in Delaware, and in Baltimore. The river Delaware at Philadelphia, 3 miles in breadth, is sometimes frozen over in one night, and the same thing occurs in all the rivers of Virginia and to the northward. The seasons, in the United States, are only three: summer, winter, and autumn, or what the Americans more expressively call the fall, from the falling of the leaves in the forests. The transition, from the locking up of all vegetation in winter to the sudden burst of it again to life at the beginning of summer, is so rapid as utterly to exclude that progressive and delightful season, which, in the more moderate climate of Europe receives the appellation of spring. Within a week or ten days after the melting of the snow, the woods and orchards are in full bloom. Both the heat and the cold are more intense in America than in Europe. The frost is stronger and more durable. The sunshine is more ardent and permanent, and the heat is far more oppressive and insupportable. It may be remarked, that in the different latitudes of the United States, the heat differs more in its duration than in its power. In 1795 at Newark, on the frontiers of Upper Canada, the duke de la Rochefoucault Liancourt saw the thermometer of Fahrenheit rise in July to 92°. In the month of August the same year he saw it at 96° at Albany in the state of New York. At Savannah in Georgia, it seldom rises above that height; though from Newark or Albany, to Savannah, there is a difference of 14° of latitude. But the thermometer remains during a month or two at Savannah at this height, and very seldom two days together in the northern states. The following

America. following remarks and facts, relative to the climate and seasons in America and Europe, are given by Dr Holyoke of Salem in the state of Massachusets; and completely demonstrate the intenseness both of the heat and the cold that are experienced in the most northerly states of the American union.

"The following table exhibits the mean or medium degree of greatest heat and cold by Fahrenheit's thermometer:

	Lat. north.	Mean of gr. heat.	Mean of gr. cold.
Stockholm	59° 20′	83.98	10.19*b*
Copenhagen	55 40	81.77	2.98*a*
Berlin	52 32	89.47	0.62*a*
Mons	50 25	89.15	1.18*a*
Prague	50 4	92.7	12.77*b*
Wurtzburg	49 46	93 87	4.*b*
Manheim	49 27	89.6	1.2*a*
Ratisbon	48 56	79.7	2.42*b*
Buda	47 40	90.7	4.26*a*
Geneva	46 12	88.9	10.2*a*
Rochelle	46 0	90.5	16.93*a*
Padua	45 22	91.4	16.93*a*
Marseilles	43 17	89.6	27.5*a*
Rome	41 53	85.43	33.46*a*
Salem in Massachusets	42 31	97.2	2.42*b*

"These European cities, except Rome, are all north of the latitude of Salem. But in the whole middle region of Europe, which is from 7 to 10 degrees north of Salem, the heat in summer and cold in winter are, on an average, less than at Salem by a difference of 5, 8, and 10 degrees. Comparing the temperature of the European atmosphere under nearly the same parallel of latitude with Salem, viz. at Rome, Padua, and Marseilles, it is found that the mean of greatest heat in Europe falls short of ours by 8 degrees, and the mean of greatest cold by more than 30 degrees. It is also found, by observations made at different times and places, that in America there falls a greater quantity of rain annually than in Europe; we have notwithstanding more fair weather, and fewer cloudy, foggy, and rainy days. The medium quantity of rain that falls yearly in Europe does not exceed 30 inches of water, whereas in America the medium quantity is at least 50 inches.

"The mean number of fair days, according to observations made in 20 cities of Europe, amounts only to 64. Several observations in America make the mean number of fair days to be about 130. The mean number of cloudy days in the same cities of Europe (all which are upon the continent) was, in 1785, 113; in America there are about 80 or 90. The number of rainy days in the same cities was, on a mean, 122; the number in America is 85 or 90. These facts seem to prove that the atmosphere of Europe is more humid than that in America; and this may be one cause why the European climate is more temperate under the same parallels of latitude, and less subject to extremes of heat and cold.

"The following facts concerning the temperature of our own climate are extremely curious. From observations made at four different hours in the day for seven years, it is found that the mercury in Fahrenheit America. rose to 85° and upwards.

In 1786. Days.	In 1787. Days.	In 1788. Days.
June 13	June 10	June 5
July 11	July 13	July 13
Aug. 8	Aug. 13	Aug. 8
Sept. 2	Sept. 2	Sept. 1
Oct. 1		
35	38	27

In 1789. Days.	In 1790. Days.	In 1791. Days.	In 1792. Days.
May 1	May 1	May 7	May 7
June 12	June 5	June 15	June 10
July 13	July 14	July 16	July 15
Aug. 11	Aug. 7	Aug. 15	Aug. 10
Sept. 1	Sept. 2	Sept. 1	Sept. 2
		Oct. 1	
38	29	55	44

The thermometer was at and above 90°,

In 1786, 4 days.	1790, 2 days.
1787, 2 do.	1791, 12 do.
1788, 1 do.	1792, 8 do.
1789, 4 do.	

During the same years in winter, the thermometer was at and below 32°, the freezing point;

In 1786,	108 days, and below	0, 4 days.
1787,	111 do.	do. 4 do.
1788,	108 do.	do. 6 do.
1789,	105 do.	do. 3 do.
1790,	119 do.	do. 5 do.
1791,	111 do.	do. 1 do.
1792,	102 do.	do. 3 do.

The mean of the mean temperature of each month during the seven years is as follows:

Jan. 24.8 tenths	July 71.
Feb. 25.	Aug. 69.7
Mar. 36.	Sept. 61.
April 45.	Oct. 49.5
May 56.8	Nov. 40.
June 67.	Dec. 27.

Mean temperature of each season.

	Winter.	Spring.	Summer.	Autumn.
1786,	25°7	45°9	70°6	52°9
1787,	25.8	45 7	68.1	50.3
1788,	25.5	45.2	68.9	52.1
1789,	24.9	43 9	70.2	49.5
1790,	29.2	43.6	67.9	49.5
1791,	23.3	48.6	71.0	49.0
1792,	25.5	49.4	68.7	51.3

Total mean temperature of each year:

1786,	48°53	1790,	46°43
1787,	47.88	1791,	48.96
1788,	47.67	1792,	48.44
1789,	47.68		

Total mean temperature of the seven years, 47.94.

America. As the obſervations in the morning were not made at ſunriſe, but at eight o'clock, Dr Holyoke ſuppoſes a ſmall abatement muſt be made; and the mean temperature of the ſeven years fixed at 47.5.

Mean temperature at the time of each obſervation:

At eight o'clock A. M.	46.55.
At noon, - -	54.15.
Sunſet, - -	47.60.
At ten o'clock P. M. -	43.7.

"Whence it appears, that the mean temperature of the day is at ſunſet, and that the temperature of the month of April is very little below the mean temperature of the year."

The very great variations of climate here indicated are ſaid not to extend themſelves in an equal degree beyond the tract of the Alleghany mountains; ſo that in the ſame latitude the climate is much more mild upon the banks of the Ohio than on the ſhores of the Atlantic ocean. As that part of the country, however, is yet leſs inhabited, or has only been ſo for a ſhort period, very few authentic documents have reached us concerning it.

445 Effect of the climate on the inhabitants. The extremes of heat and cold which ſo rapidly ſucceed each other in America at different ſeaſons, and which perſevere ſo ſteadily when they are once begun, do not fail to affect very ſenſibly the health of the inhabitants of the United States. In general, people become old in America ſooner than in Europe. In the more northern parts of the country, that is, in the New England ſtates, and alſo near the mountains, this is leſs ſenſibly the caſe; but excepting in theſe ſituations, it is more rare to ſee men of a great age there than in Europe. The influence of the climate upon females is ſtill more ſenſible. When young, they are generally beautiful, and more particularly ſo at Philadelphia, and in the other middle ſtates. But after 20 years of age they ſoon begin to loſe their freſh colour. At 25, many of them might be taken for Europeans of 40; as their bloom is faded, and their form has already ſuffered a change. If they have previouſly been mothers, which in this riſing country is uſually the caſe, their alteration is ſtill more premature. Yet, it is admitted, that neither nightly revels, the abuſe of ſpirituous liquors, the want of exerciſe, nor an exceſs of it, can be brought to account for this early change. In the northern ſtates, the period of their beauty is indeed lengthened, but only for a few years. Whereas, in the ſouthern ſtates it is ſhortened. In South Carolina, at the age of 30, a woman appears old; and both men and women ſoon loſe the bloom of youth, and feel the infirmities of age. At the age of 50, in that exhauſting climate, the hair becomes entirely white. The number of children that die in their infancy is ſaid to be proportionally much greater than in Europe; though this does not prevent the population from advancing with nearly twenty times the rapidity that it does with us. Colds, hooping-coughs, and diſorders of the throat, carry off great numbers of children. The moſt common mortal diſeaſes in all the ſtates are dropſies of the cheſt, conſumptions, and bilious and putrid fevers. Of diſeaſes that are not mortal, the moſt frequent of all is the ague or intermitting fever, which, however, ſometimes degenerates into a bilious fever. Theſe intermitting fevers are undoubtedly the reſult of a climate abounding in moiſture, ariſing from immenſe rivers, ſwamps, and foreſts, acted upon by the intenſe heat of a burning ſun. In ſuch a ſituation the human ſtrength is exhauſted, ſo as to be at all times liable to fall into this ſimpleſt and leaſt dangerous form of fever. Though it is experienced by almoſt every ſtranger, and at times by moſt of the natives, it is ſeldom hazardous; but at the ſame time it undoubtedly enfeebles the conſtitution, and prepares it for ſinking under other diſeaſes. It is always towards the end of ſummer, when the heat is moſt intenſe, and the health of the people moſt weakened by the hot and moiſt climate of America, that the dreadful diſeaſe, the yellow fever, makes its appearance. It thus comes at a period when intermittent fevers at all times abound; and the extreme mortality which it produces is probably to be accounted for, not leſs from the ſtate of debility and relaxation with regard to general health, than from any peculiar malignity of the diſtemper, which never fails to yield to the reſtorative and ſtrengthening power of a few froſty days, or even of rainy. It is a ſingular circumſtance, that of the great number of French who were in Philadelphia during the different periods at which it was deſolated by this fatal ſcourge, ſometimes none, and never more than four or five in a ſeaſon, ſuffered by the yellow fever, though none of them deſerted the city on that occaſion. The only plauſible, though probably inadequate, account which has ever been given of the cauſe of their eſcaping that calamity, is their habitual abſtinence from ſpirituous liquors; in the uſe of which the Americans of all ranks, that is the men, not the women, indulge very freely, and thereby no doubt increaſe the degree of debility which the climate has a tendency to produce, and conſequently expoſe themſelves in a greater degree to the influence of any contagious diſtemper. Under all its advantages, however, the climate of America allows the full exertion and enjoyment of all the human faculties. Men of ſound conſtitutions in every part of it attain to old age. Even in South Carolina in 1787, of the 9600 white inhabitants of Charleſtown 200 were above 60 years; and in the New England ſtates inſtances of great longevity abound.

America.

446 American manufactures. The manufactures that are carried on in the United States are extremely few. A year ſeldom paſſes away, without attempts being made by individuals to eſtabliſh cotton-works, glaſs-houſes, and other extenſive manufactories, but without ſucceſs. Sometimes, particular ſtates aſſiſt in the moſt liberal manner, with the public money, the undertakers of theſe plans; but the money is ſoon ſpent, and the work obliged to be dropped. The reaſon is obvious. In the European nations, men and women abound, and the lower claſſes are, therefore, under the neceſſity of giving their induſtry, and the reſult of their ſkill, for little more than what is barely ſufficient to afford them ſubſiſtence. In America the caſe is different. Men are few, the ſoil is fertile and unoccupied, and ſubſiſtence is eaſily procured. Every man aſpires, therefore, to the poſſeſſion of ſomething beyond the gratification of his preſent wants, or the mere neceſſaries of life. He endeavours to become independent, by obtaining and cultivating a portion of the ſoil for his

America. his own uſe. To withdraw him from an enterpriſe of this kind, which is ſo flattering to the paſſions of all men, a large reward is neceſſary, or, in other words, if an ordinary tradeſman in America do not receive high wages, he will go to the woods, and ſettle as a farmer, or ſmall proprietor, which in that country he can do upon eaſy terms. Hence it happens, that the manufacturers of Europe find it eaſy to underſell all thoſe who attempt to rival them in America. Even, when a ſkilful European manufacturer conveys his capital and his tools acroſs the Atlantic, the caſe is not altered. His ſervants and labourers muſt be carried along with him. Suppoſing this difficulty to be ſurmounted, he muſt immediately give them three times the wages that they received in Europe, or they will not remain in his ſervice, as they can eaſily obtain ſuch a price for their induſtry there. In conſequence of high wages, they are enabled, in a year or two, to accumulate enough of money to enable them to purchaſe or obtain credit for a ſmall farm, in a fertile though remote part of the country. They never fail, therefore, ſpeedily to deſert the buſineſs to which they were originally educated, and to betake themſelves to agriculture, which, from the independence it affords, is of all occupations the moſt grateful to the human mind. Thus, any great manufacture carried on in America, could only be ſupported by a ſucceſſion of emigrant workmen, receiving exorbitant wages, and having the proſpect of immediately deſerting it; a ſituation, in which it evidently could not proſper. Hence, to a very remote period, that is, till land ſhall become ſcarce and precious, in conſequence of an overflowing population, the United States of America muſt depend upon Europe for their moſt valuable manufactures. Neither is this a misfortune to America. Men there, as elſewhere, in following out their own private intents, contribute moſt effectually to advance the proſperity of their country. Agriculture is there purſued becauſe it is the moſt profitable of all employments to thoſe who engage in it, and leads them moſt rapidly to the poſſeſſion of property and independence; at the ſame time, by providing in abundance the means of ſubſiſtence, it facilitates to the community the acquiſition of what chiefly it wants, a numerous population, which, by the natural progreſs of things will ultimately bring in its train the cultivation of all the arts.

The Americans, however, are not deſtitute of a conſiderable variety of ſuch manufactures, as their peculiar ſituation has naturally led them to eſtabliſh. We have already mentioned, the manufacture of iron from the ore, which they practiſe in ſeveral ſituations to the eaſtward of the mountains, though not to ſuch extent as to ſupply the wants of their country. They alſo tan leather, which they are induced to do from the abundance of oak-bark that they poſſeſs; and they manufacture hats in conſiderable quantities. They have diſtilleries for the preparation of ſpirituous liquors, both from molaſſes imported from the Weſt India iſlands, and from grain. Tradeſmen in the towns, and private families in remote ſituations, prepare ſoap, candles, and malt liquors. In the remoter diſtricts, the women alſo prepare a conſiderable part of the clothing of their families. Upon the rivers, great numbers of ſaw mills are erected, for the purpoſe of converting to profit the timber, which they are under the neceſſity of cutting down, before the lands can be brought into cultivation. Connected with this operation, of clearing the land of timber, is the preparation of pot and pearl aſhes. As this forms a conſiderable branch of the trade of many American towns, the back country of which has been recently ſettled, we ſhall here ſtate the mode of preparing this ſalt, which has been generally adopted. America.

Large tubs, with a double bottom are filled with the aſhes of wood: the uppermoſt bottom, which contains ſeveral holes, is covered with aſhes, about 10 or 11 inches deep, while the under part of the tub is filled with ſtraw or hay. Water being poured over the aſhes extracts the particles of ſalt, and diſcharges all the heterogeneous matter which it may yet contain on the layer of hay or ſtraw. The ley is drawn off by means of a cock, and if it ſhould not yet have attained a ſufficient degree of ſtrength, poured again over the ſame or over freſh aſhes. The ley is deemed ſufficiently ſtrong when an egg ſwims on it. This ley is afterwards boiled in large iron caldrons, which are conſtantly filled out of other caldrons, in which ley is likewiſe boiling. If the ley begins to thicken in the caldron, no freſh ley is added, but the fire is well fed with fuel until all the aqueous particles are ſeparated, and the whole is completely inſpiſſated and indurated. This ſalt is of a black colour, and called *black potaſh*. Some manufacturers leave the potaſh in this ſtate in the caldron, and increaſe the fire, by means of which the oil is diſengaged from the ſalt in a thick ſmoke, and the black potaſh aſſumes a gray colour, in which ſtate it is packed up in the barrels for ſale.

The proceſs of preparing the potaſh requires more or leſs time according to the quality of the aſhes and the ley, and to the degree of ſtrength of the latter: the medium time is 24 hours. The aſhes of green wood, and eſpecially of oak, are preferred. No potaſh can be prepared from the aſhes of reſinous trees, and aſhes which are five or ſix months old are better than thoſe that are new.

Some manufacturers uſe only one caldron for boiling, which they fill with cold ley as it comes from the tubs, and others put the ſalt, as ſoon as it begins to coagulate, into ſmaller caldrons to complete the proceſs.

In many parts of the ſtate of New York, eſpecially in the north, and the vicinity of Albany, the inhabitants who fell the wood prepare the potaſh. But there are alſo large manufactories, where from 30 to 40 tubs are uſed for preparing the ley, and from 10 to 12 caldrons for its evaporation. The manufacturers buy the aſhes from private families. The tubs and caldrons are of different ſizes, in proportion to the greater or leſs extent of the manufactory. By a general eſtimate, from five to ſix hundred buſhels of aſhes yield a ton of potaſh.

The barrels in which the potaſh is packed up, muſt be made of white oak, or, if this cannot be had, of wood which is but little porous. The ſtaves ought to be far more durable than for caſks in which other dry goods are packed, the hoops alſo muſt be more numerous; for the leaſt fiſſure would expoſe the potaſh to humidity, to the air, and conſequently to deliqueſcence and diſſolution. Inſtances have occurred, when

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works

America. when barrels badly made and hooped, and which had been filled with potaſh, were ſoon after found to be half empty.

448 Pearl-aſhes. Pearl-aſh is well known to be potaſh purified by calcination. To this end the potaſh is put into a kiln, conſtructed in an oval form, of plaiſter of Paris; the inſide of which being made otherwiſe perfectly cloſe, is horizontally interſected by an iron grate, on which the potaſh is placed. Under this grate a fire is made; and the heat reverberated by the arched upper part of the kiln, completes the calcination, and converts the potaſh into pearl-aſh, which is taken out of the kiln, and, when completely cooled, packed in barrels. The proceſs of calcination laſts about an hour. Pearl-aſh is proportionally more heavy than potaſh, on account of its greater compactneſs, and the loſs of weight experienced by the latter, though the calcination is very trifling. Although pearl-aſh is leſs liable to deliqueſce by the air than potaſh, yet the barrels in which it is packed are of the ſame ſort and ſtructure with thoſe in which the latter ſalt is barrelled. They are of different ſizes, and contain from 200 to 300 pounds. Potaſh as well as pearl-aſh is ſold by tons in the courſe of trade; and it is not lawful to export either before it is duly inſpected by the public ſearchers, who are appointed for this purpoſe in all the ſtates where pearl or potaſh is manufactured.

449 Maple ſugar. The manufacture of ſugar from the maple tree, *acer ſaccharinum Linn.* called by the Indians *ozeketa*, is peculiar to the United States of America. The whole country to the northward of Pennſylvania abounds with theſe trees, and alſo to the ſouthward upon approaching the mountains. In the weſtern territory they everywhere abound. Very conſiderable quantities of ſugar are made from them; ſo as to afford to the inhabitants an abundant ſupply of that valuable commodity. The medium produce of a tree ſtanding in the midſt of a wood, is three pounds of ſugar. The average produce of trees ſtanding on ground which has been cleared of all other woods, is from ſix to ſeven pounds per tree. A barrel of the firſt juice which comes from the maple tree will yield ſeven pounds of ſugar, and four if it ſtand in the midſt of other wood. The ordinary price of this ſugar is 1s. per pound. A barrel of the ſecond juice will yield three gallons and a half of treacle. Four or five barrels of the third juice will yield one barrel of a good and pleaſant vinegar. The vinegar is found to be better in proportion, as the juice is more concentrated by boiling. Hence ſome perſons brew but one barrel of vinegar from 10 barrels of the third juice. To clarify this vinegar it muſt be boiled with leaves. The third juice, when not uſed for vinegar, yields, if mixed with an equal quantity of water, a fermented liquor of an excellent flavour. The longer the firſt juice is boiled, the better and finer the ſugar becomes. In order that the trees may continue productive, they require to be tapped with extraordinary care, that is, the fiſſures or wounds made in them for extracting the juice, muſt neither be too deep nor too wide; ſo that no water may ſettle in them, and that the wood may cloſe again in the ſpace of a twelvemonth. During the time the juice is flowing out, which laſts about ſix weeks, and generally begins about the commencement of the month of February, all the days on which it freezes or rains are loſt; ſo that the number of days on America. which the buſineſs can be purſued to advantage, is frequently from theſe circumſtances much diminiſhed. Yet during the above time, two perſons can often make from 500 to 600 pounds of good ſugar, and this quantity is increaſed in proportion to the number of workmen employed. As the maple tree, wherever it is encouraged upon a moiſt ſoil, multiplies with aſtoniſhing rapidity, there is no other limit to the manufacture than the want of people to engage in it, or the limited demand for the commodity in a thinly peopled country. (For other particulars reſpecting this intereſting ſubject, ſee SUGAR).

450 Ship-building. Ship-building is an art much practiſed in the northern ſtates upon the ſea coaſt. The Americans are underſtood to poſſeſs conſiderable ſkill in this branch of buſineſs, and to perform their work both in a ſubſtantial and frugal manner. In building veſſels in New Edgland, they make the beams which ſupport the deck from the trunk of the ſpruce fir; taking care that theſe, and ſome other parts which are framed of this timber, have a ſufficient thickneſs of wood, and be ſtrongly rivetted together. The reſt of the veſſel is made of oak planks. It is only of late that the ſpruce fir has been uſed in building ſhips in this quarter. The ſhip-builders affirm, that it is an improvement to the veſſels, though in all probability, the ſcarcity of oak which now begins to be felt on the ſea coaſt of New England, has been the chief cauſe of the innovation. It is ſaid, however, that the ſpruce fir reſiſts, better than almoſt any other kind of wood, the action of the ſun and the weather, which in the American climate put all kinds of timber to a ſevere trial. The planks of the body of their ſhips, to the water's edge, are often made, not of oak but of beech wood, or of the wood of the black birch, which is reckoned equally hard and durable. The keel is of the wood of the beech, of the ſugar maple, or of what is called the *rock maple*. By uſing theſe kinds of wood for ſo many purpoſes, there is often not above a fifth-part of the ſhip made of oak. The ſhipbuilders maintain, that the beech, the black birch, and the maple, are very ſerviceable for the preſervation of iron, which the ſaline particles of the oak are apt to conſume. Inſtead of uſing tallow for thoſe purpoſes in ſhipbuilding, to which it has been uſually applied, all the ſhip-carpenters in America make uſe of train oil very plentifully laid on. By theſe devices, they have reduced the expence of ſhipbuilding to half of what it formerly was, to the great emolument of the perſons engaged in it.

451 Fiſheries of cod. The fiſheries are a branch of induſtry in which the Americans engage to a conſiderable extent. The whole coaſt of Maſſachuſets, and eſpecially of the diſtrict of Maine, is inhabited by fiſhermen engaged in the fiſhing of cod upon the great bank of Newfoundland, or in the ſea in their own neighbourhood. They bring all the fiſh on ſhore, where they receive the laſt dreſſing. The fiſh are waſhed and laid in heaps, that the water may run off. Thereafter they are expoſed for two or three days to the air; after which they are placed on hurdles that are about four or five feet in breadth, three or four feet above the ground, and as long as the field on which they are erected. The fiſh are laid ſeparately, and frequently turned, that they may get thoroughly dry; which happens under a bright

America. bright American ſun in about ſix days. At laſt they are packed in caſes, preſſed down, and exported either to the Weſt Indies or to Europe. The beſt fiſh, that is, thoſe caught in the firſt fiſhing months, are ſuperior to the reſt, from being dried more ſlowly. They are ſent to Spain, excepting a few that are uſually beſpoke by the better ſort of people in the neighbourhood, and are ſold at double the price of thoſe which are caught later in the year, when the heat is more intenſe. The fiſh caught on the coaſts of Maſſachuſets and of Maine are neither ſo large nor ſo plentiful as thoſe taken at the Great Bank near Newfoundland; yet this fiſhery employs a conſiderable number of veſſels, which proceed only five or ſix miles from the coaſt, and return home every week.

452 Whale fiſhery. Beſides this, and the ſalmon and herring fiſheries, which are conſiderable, the Americans alſo engage extenſively in the whale fiſhing, on the coaſt of Brazil, and in the Pacific ocean in the ſame latitude, and in the Weſt Indian ſeas, as far eaſtward as to the Cape of Good Hope, from the 18th to the 25th degree of latitude. This buſineſs is ſometimes alſo proſecuted in Hudſon's bay and the ſeas adjacent to the coaſt of Greenland and Labrador, which abound more than the ſouthern ſeas in whales, and thoſe of a larger ſize, and ſuch as afford oil of a better quality. But as the vaſt maſſes of ice which infeſt the ſeas in theſe northern latitudes render the fiſhing dangerous, the Americans in general abandon the fiſhery in the north to the European fiſhermen. Of late years, the whales have altogether abandoned the coaſts of the United States, though they were formerly found in conſiderable numbers in that quarter. The ſpermaceti whales are chiefly found in the Indian ocean, on the coaſts of Africa and Madagaſcar, in the Pacific ocean, and on the coaſts of Peru and Chili. A voyage to this fiſhing occupies from ten to eighteen months. The crew receive no wages, but have a certain ſhare of the blubber; the captain has a fifth; the pilot a five-and-fortieth or a ſixtieth part of what is taken. The owners never make leſs than 20 *per cent.* upon the adventure; and the captain, from a ſucceſsful voyage, in common years, and at ordinary prices, uſually receives about eight or nine hundred dollars. A ſhip of 160 tons has a crew of 15 perſons and two boats. At their return, the blubber which has been barrelled at ſea is put into freſh barrels, and cleared from its ſediment before it is carried to market; for though the ſediment be as fit as the reſt for uſe in the ſoap-works, yet the oil in which it appears is regarded as of inferior quality in the European market. This ſediment, and a ſort of white fleſh which is found in the head and belly of the whale, are then ſqueezed in a preſs. A new quantity of oil

453 Spermaceti candles. of the beſt quality is thus obtained. The reſidue which remains after the firſt preſſing is put again into the preſs, and more forcibly ſqueezed than before. It affords a certain quantity of oil; and it is the produce of this laſt ſqueezing which, after undergoing a boiling, is poured into moulds, and forms ſpermaceti candles: Theſe are ſold for half a dollar a pound. Thoſe which are called ſpermaceti fiſhes yield this matter in great quantity. In their heads alone there are often five or ſix tons of this matter; though the other whales have the head differently compoſed, and do not afford above a quarter of a ton out of each head. Thus all whales yield more or leſs of this matter, which is ſo much valued as a material for candles. America.

Though the Americans have few manufactures, they engage extenſively in every kind of trade. In the interior of the country, almoſt every perſon who can command the requiſite capital is an innkeeper, or keeps a ſtore. The employment of innkeeper is there perfectly reſpectable, and is carried on by perſons of diſtinguiſhed character. What is called a ſtore in America is a ſhop or place where all kinds of commodities intended for conſumption are to be found and ſold by retail. Nothing is excluded from it. Train oil and candles, ſtationary wares, hardwares, and cloth, together with diſtilled ſpirits, ſugar, wines, and coffee, are all kept in it in the ſame manner as in the ſhops of ſome of the remote villages in Scotland. In ſome ſituations in America, theſe ſtores produce conſiderable profit, and are made ſubſervient to other ſpeculations. When a man engages in the clearing of land, and can at the ſame time afford to lay in the goods neceſſary for keeping a ſtore, he is enabled to get back from the workmen whom he employs the greateſt part of the wages he has paid them, in the form of profit upon the goods which they purchaſe at his ſtore. In this way, he contrives to have his work performed at a price which ultimately does not amount to more than a half of what is paid by others for the ſame labour. 454 American trade.

455 Foreign trade. With regard to foreign trade, the United States have of late years poſſeſſed a very great proportion of that which has been carried on among civilized nations. The vaſt extent of ſea coaſt, amounting to nearly 2000 miles, which ſpreads before the United States, the number of excellent harbours, the numerous creeks and immenſe bays which indent the coaſt, and the rivers and lakes which peninſulate the whole country, ſo habituate all young perſons in America to the idea of a maritime life, and to a fondneſs for navigation, that great numbers of them are at all times found ready to engage in it. The enterpriſing ſpirit of the people favours this tendency; and accordingly, every kind of commercial ſpeculation eaſily finds men ready to embark in it. For ſome time after the treaty of peace with Britain, by which their independence was acknowledged in 1783, while each ſtate continued to have its particular laws, prohibitions, and regulations; while the cuſtomhouſe rates changed every year, according to momentary conſiderations; and while an active jealouſy and rivalſhip ſubſiſted between the different ſtates, the commerce of the whole remained on a very precarious footing. It was only from the period of the eſtabliſhment of their new conſtitution that a conſiſtent ſyſtem of national commerce could be adopted. It ſo happened, that this period proved extremely favourable to their engaging extenſively in foreign trade. The violent ſhock, or rather the utter ruin, which the revolution brought along with it to the manufactures and commerce of France, forced her to open the ports of her colonies to the veſſels of neutral powers. From that moment, the Americans engroſſed all the commerce of the French colonies, which they were ſo well ſituated to carry on to advantage. The other powers of Europe, which had alſo colonies in the Weſt Indies, being all ſucceſſively engaged in the war, opened the ports of their colonies in like manner to the Americans, or at leaſt conſiderably diminiſh-

America. ed their prohibitive regulations. Thus the commerce of the United States had the victualling of the Weſt India iſlands, as well as an excluſive trade with the French and Dutch colonies; not only in proviſions, but alſo in commodities of every kind. Their ſhips were freighted to carry Weſt India produce to Europe, and to bring back in return the articles neceſſary for the conſumption both of the United States and of thoſe ſame colonies. Add to this, that, in conſequence of the great ſcarcity of proviſions that during various years prevailed either in France or in Great Britain, the Americans found in theſe countries a ready and profitable market for all the productions of their country. By theſe means, aided by the eſtabliſhment of banks, and by an unexpenſive, though efficient, government, the commerce of the United States ſoon became extremely extenſive. It reached the Eaſt Indies, China, and every part of the known world. It is true, that by the raſhneſs of their ſpeculations, many American merchants ſuffered; but the tide of commercial proſperity was very great upon the whole, and almoſt unexampled; ſo that great fortunes have been rapidly acquired in all the maritime towns of the United States.

Whether this commercial proſperity will be permanent, now that the European nations have returned to the enjoyment of peace, and conſequently have recovered the power of carrying on their own commerce without danger or interruption, with all the advantages of an abundant population, and of inferior wages of labour, is a queſtion about which many doubts have been entertained. It remains, however, with men of ſound reflection in America, a queſtion of ſome difficulty, whether, in the preſent ſtate of their affairs, the attempt that has been made to conduct an extenſive foreign commerce, is, upon the whole, favourable to the proſperity of their empire. Diſtant navigations are undoubtedly unfavourable to the progreſs of population, by the great number of men which they conſume, and by preventing the increaſe of families. This kind of commerce, alſo, by keeping up a taſte for foreign luxuries, induces a people that have no manufactures to laviſh away the neceſſaries of life on the purchaſe of ſuperfluities, and thus to introduce a coſtly ſtile of living, which is ſaid already to prevail too much in the United States, and which in every country has been found to be the greateſt enemy to the increaſe of the people.

One circumſtance in the mode of managing the American commerce ought not to paſs unnoticed. In Europe, we are accuſtomed to imagine that a man cannot be qualified to act as captain of a ſhip till he has made a number of voyages, and paſſed through a regular courſe of ſtudy; whereas, in New England the merchants do not heſitate to entruſt their ſhips to young perſons, who have frequently been only one year at ſea. As they have grown up in the buſineſs of the counting-houſe, they are perfectly acquainted with the price, the quality, and the ſale of each different commodity. The firſt year, they are aſſociated with a ſkilful ſteerſmate, and act at once in the capacity of captain and ſupercargo. Their veſſels do not ſuffer ſhipwreck more frequently than other ſhips which are more cautiouſly navigated. In the courſe of a few years, theſe young people become merchants themſelves, the captain's profits being always conſiderable. America. As they are generally appointed from the families of merchants, they receive aſſiſtance from their employers.

There is one kind of commerce which, in ſpeaking 456 Traffic of of the trade of the United States, ought not to be land. omitted, as it is altogether peculiar to North America; that is, the traffic of land. This trade is founded upon the conſiderable maſs of land in the territory of the United States, in compariſon with their preſent population, and upon the probability of the rapid augmentation of that population, either by the natural and ordinary means of reproduction, or by foreign emigrations. This, like all other branches of trade, and more than any other, is a traffic of ſpeculation. At the end of the revolution, the waſte lands, which amounted to more than four-fifths of the American empire, were found to belong to different ſtates, which, as ſovereigns, now inherited this property from the ſovereignty of the crown of Great Britain. The lands granted by the kings of Great Britain have, with ſome exceptions, remained in the poſſeſſion of the granters; but the amount of theſe was infinitely ſmall in proportion to the maſs of the uncultivated land. The ſmall ſtates near the ſea having been longer inhabited, poſſeſſed but a ſmall portion; and ſome had none at all; while the great ſtates, whoſe territory extended far into the interior, ſuch as Georgia, the Carolinas, Virginia, Pennſylvania, and New York, were in poſſeſſion of immenſe quantities of foreſt lands. It was neceſſary for theſe ſtates to ſell the waſte lands, to afford encouragement to their growing population, to preſent a bait to foreign emigration, and to liquidate the debts reſulting from the war without burdening the people with new taxes, which at that time they were little able to bear. Among the lands to be ſold were the confiſcated eſtates of the royaliſts, who had given aſſiſtance to the Britiſh during the war. To bring theſe lands to ſale, the ſtates opened land offices, where perſons who meant to purchaſe received warrants to have the lands they pointed out ſurveyed by the ſurveyor of the ſtate, poſſeſſion being delayed till payment of the price, or fulfilment of ſome part of the conditions of the transference. Great ſpeculations immediately began, land being purchaſeable of all the ſtates at a very low price. The ſtates were then inundated with paper money, peculiar to each, and all in a ſtate of depreciation. By buying up this paper at a trifling price throughout the country, and delivering it to the ſtates as the price of territory, many ſpeculators acquired land with a real value of two or three cents or hundredth parts of a dollar per acre, payable in ſix or eight years, with a diſcount from the treaſury of the ſtate for prompt payment, according to the value at which the land was rated by the law. Other ſpeculators, without adopting ſuch a mode of payment, made purchaſes merely upon the hope entertained by every American of an immediate increaſe of population, by emigration and otherwiſe, which would neceſſarily ſoon raiſe the price of lands. Conſiderable quantities of land were alſo beſtowed by the ſtates upon the officers and ſoldiers who had been employed in their armies during the war, as a remuneration for their ſervices. By theſe grants, and by purchaſes made by individuals from the land offices of the ſeveral ſtates, or from commiſſioners appointed

America. pointed to put up large portions to public ſale, a great extent of territory in all the ſtates ſoon came to be held, and continues to this day to be ſpeculated upon, by private perſons. The ſpeculators in land who hold great quantities of that commodity, endeavour to turn it to account chiefly in three ways: 1ſt, By ſelling the land in large parcels to men of fortune in Europe or America; 2dly, By ſelling it in ſmall parcels to families who mean to ſettle upon it; and, laſtly, By preſerving it till time and a diminution of the quantity of this ſort of merchandiſe have raiſed the value of it to a price anſwerable to their expectation.

457. Sales of land in large portions.

The firſt of theſe modes, is that which is moſt generally deſired. To accompliſh it, agents have at different times been ſent to Europe. Several great ſales were by their means effected in England upon advantageous terms, which raiſed the price of the remaining lands, increaſed the confidence of the ſpeculators, added to their numbers, and extended their ſchemes. The opinion of an immenſe emigration, to which the French revolution and the ſituation of Europe gave riſe, conſpired for ſome time to give confidence to theſe ſpeculators. The great ſales to Europeans were facilitated by the periods of the payments to be made to the ſtates, which were always diſtant, and by the delays of theſe payments which could not be obtained without much difficulty. In the ſtates of Pennſylvania and Maryland, every foreigner could buy and poſſeſs land as well as a citizen. In ſome others, although this privilege was not given by law to foreigners in general, yet it was readily permitted by the legiſlature when applied for. In all the ſtates, a foreigner may hold land in the name of an inhabitant; and the great intereſt the ſtates had in ſelling, and in buying foreign capitals into their territory, has always given entire ſecurity to this borrowed right of poſſeſſion. In making bargains of this kind, the conditions are various according to the views of the parties. The periods of payments are generally ſhort; at leaſt a large part of the purchaſe money is paid down when the bargain is concluded. The conditions impoſed by the ſtates in the contracts of ſale are binding by law upon the new purchaſers; but very often the old purchaſer remains reſponſible, in caſe of their not being fulfilled by the new one. The new purchaſers become ſpeculators themſelves, and in order to turn their new property to account, have recourſe to the ſame means that were employed by thoſe of whom they bought it.

458. Sales of land in ſmall parcels.

Land is ſold in ſmall parcels in ſeveral ways: either out and out for ready money, a mode of ſale which though not unfrequent, is not the moſt common; or out and out, but to be paid for by inſtalments; in which caſe the title deeds are not delivered till after the purchaſe money is entirely paid; and the ſeller retains a right of ejecting the new ſettler from his land, if the conditions of payment be not fulfilled. Sometimes the ſeller only requires a ſmall part of the price of the land in ready money; and the land remains ſubject to a perpetual rent, payable in money or in produce, which the purchaſer is not always let at liberty to redeem. Sometimes the ſeller endeavours to let his lands, for a certain number of years, for an annual rent, or under condition of clearing annually a certain number of acres, the whole improvements being to return to himſelf at the termination of the leaſe: But ſuch bargains are practiſed, ſettlers being unwilling to accept of a temporary right. Almoſt all the great landed proprietors, therefore, endeavour to get ſome perſons to accept, upon moderate terms, of ſmall farms, and to reſide upon their eſtates; becauſe by clearing ſome portions of it, they enhance the value of the reſt. America.

459. The third mode of deriving a fortune from [illegible] by the ſales of land, by waiting till time and the increaſe of people, is the reſource of great proprietors who have not been able to employ the two other. Some perſons, however, with little capital, endeavour to wait upon the mere calculation of the riſe that will probably take place in a given time. In their calculations, men of a ſanguine temper are frequently deceived; and there are many examples of proprietors, who in the following year, would be extremely glad to ſell at the price that they had refuſed the year before. Theſe ſpeculations in land, however, have been the means of making great fortunes in America; but they have alſo, when engaged in without ſufficient capital, occaſioned more diſtreſs and greater and more diſtreſſful bankruptcies than any other kind of commercial adventures. The lands in America are alſo the branch of trade which has given occaſion to the greateſt number of law ſuits, as well on account of the titles as of the boundaries of eſtates, and of the fulfilment of the conditions of ſale. The moſt certain, as well as the moſt advantageous means of deriving profit from a great extent of new land in America, is ſaid to be for the purchaſer to begin clearing it himſelf; to attract inhabitants as ſpeedily as poſſible, by giving them, at a low rate, and even for nothing, if neceſſary, a number of acres ſufficient for the maintenance of their families; to erect mills, make bridges and roads, even to build a few houſes, and to encourage in every way the efforts of the new ſettlers. There is no example of theſe firſt ſacrifices, when made with intelligence and to a ſuitable extent, having failed rapidly to increaſe the value of the land reſerved by the proprietor, and ſpeedily to enrich him by attracting great numbers of emigrants from other countries. As the ſubduing of a vaſt wilderneſs, and filling it with men of a civilized race and character, is an event of much importance in the hiſtory of mankind, we ſhall here take notice of one of the inſtances of great ſucceſs in an undertaking of this kind, that occurred to an European ſpeculator. price

460. Remarkable purchaſe of land.

The diſtrict called *Geneſſee* on the ſouthern ſhore of Lake Ontario, or rather that part of the diſtrict which was not then ſold, was in 1791 purchaſed, in London, from Mr Morris for 1s. per acre. He had bought it from Mr Phelps for 5d. per acre. The contract was concluded on the ſuppoſition that this tract of land contained 1,000,000 of acres; and a condition was added that the price or ſum of 50,000l. ſterling which was to be paid immediately, ſhould be returned by Mr Morris, provided that Captain Williamſon, the oſtenſible purchaſer, who was to view the lands, ſhould not find them anſwerable to the deſcription given of them. The purchaſer was ſatisfied with the lands, and on ſurveying them a ſurplus was diſcovered of no leſs than 120,000 acres. But Mr Morris made no difficulty on transferring them, together with the reſt, to Captain Williamſon, without the leaſt remuneration, becauſe, as he obſerved, he had intended to ſell the whole with-

America. out any reſervation. Captain Williamſon is ſuſpected to have been only the agent of a very wealthy Britiſh baronet. But in every reſpect he has acted as proprietor. The diſtrict bought by him, bounded on one ſide by Lake Ontario, and on the other by the river Geneſſee, extends 80 miles in length by 30 or 40 in breadth. To preſerve the continuity of his lands, he made ſeveral additional purchaſes, ſo that his eſtate ſoon amounted to 1,500,000 acres. After ſurveying the whole, he fixed on ſpots for building towns, as central points to a ſyſtem of ſettlements. Theſe towns, were, Bath, on the creek of Conhoctoon, Williamſburg, on the river Geneſſee, and Great Sodus, on Lake Ontario. He immediately eſtabliſhed a mode of communication between Philadelphia and this new tract, by forming roads in a direct line, ſo as to ſhorten the journey at leaſt 300 miles. Theſe new roads were made merely by felling the trees to the breadth of an ordinary road, in as ſtraight a line as poſſible through the foreſt, and by removing them to one ſide of the path; their ſtumps to the height of ſeveral feet being ſtill left ſtanding. He alſo erected ſeven ſaw mills, and three corn mills. He built a great number of ſuch houſes as the firſt ſettlers upon lands uſually require; and he began in ſeveral places to clear the woodlands. His firſt labourers were Germans, brought from Hamburgh; but they ſpent their time in idleneſs and drunkenneſs, and ſoon left him. They were replaced by Iriſhmen, by whoſe aſſiſtance his roads were ſoon put into what the Americans account good condition in ſuch a ſituation; that is, he made lanes through the woods in the way already mentioned. The reſult was, that his lands, which at firſt ſold at one dollar per acre, in two years time, ſold for 3 dollars. The produce of about 800,000 acres diſpoſed of in this way, not only refunded the purchaſe money, and the whole amount of the other expences incurred, but is alſo underſtood to have yielded a nett profit of 50,000l. ſterling. To obtain this ſucceſs, however, Captain Williamſon found it neceſſary to reſide in the woods in the midſt of his poſſeſſions. When he ſold ſmall ſhares of 500 or 1,000 acres, he always ſtipulated that one family ſhould come to ſettle upon each ſhare within 18 months, under the penalty of a forfeiture of the bargain. When larger portions were ſold, he ſtipulated, that a proportional number of acres ſhould be cleared of wood. His terms of payment were, to diſcharge half the purchaſe money in three years, and the remainder at the expiration of ſix years; the payment of intereſt to commence within 18 months after the bargain. Thus, a purchaſer who inſtantly ſet about clearing the ground, could eaſily obtain its produce before the intereſt became due; and his crops frequently aſſiſted him towards the payment of the firſt inſtalment. He alſo eſtabliſhed ſtores of proviſions in different places; but theſe he never opened for ſale unleſs the ſettlers could not otherwiſe ſupply themſelves, that the ſale of the produce of their lands might not be injured. He likewiſe built a ſchool at Bath, and endowed it with ſome hundred acres of land. He gradually built inns, and even a ſeſſions houſe and a priſon, for the public uſe. By all theſe efforts, added to great care in preventing litigation among the ſettlers; by fixing in a preciſe manner the boundaries of the ſeveral pieces of property ſold, theſe extenſive foreſts were in a few years reduced under the dominion of man, and put into a train of ſpeedily becoming populous and valuable. America.

461 State of agriculture.

From what has been already ſaid concerning the ſtate of manufactures in America, and the general ſituation of the country, it will eaſily be conceived, that the greater number of the people muſt be ſtill engaged in agriculture. Indeed, it is underſtood, that nine-tenths of the inhabitants of the United States follow this employment. Concerning the ſtate of it, when conſidered as an art, it is difficult to ſpeak with preciſion, on account of the variety of forms in which it is practiſed in different diſtricts of that great country. It may juſtly be ſaid, that the art of agriculture exiſts in America in all its known degrees and varieties, both of perfection and of imperfection. The ancient ſtate of Maſſachuſets is as much cultivated as France or England. The houſes ſtand near to each other, in the midſt of the fields and farms to which they belong: ſome of the roads ſeem to be one continued village; and to ſupport this population much induſtry is exerted upon the ſoil. Moſt of the fences are made of ſtone. The harveſt is always completely ſecured in houſes, and a great part of the ground is always periodically laid down in graſs. Numbers of horſes employed in country labour are ſeen in the fields; but they are not remarkable for beauty. The cattle are of a fine breed, and all the paſture grounds are covered with them. But the agriculture of Maſſachuſets, and of ſome other parts of the New England ſtates, affords no proper criterion by which to judge of the ſtate of this important art in the greater part of America. The general rule with regard to huſbandry in that country is, that it is extremely defective and ſlovenly. This does not ariſe ſo much from the want of ſkill on the part of the Americans, as from the nature of their ſituation. In that country, land is plentiful and cheap; but men are few, and labour is conſequently dear. An American huſbandman, therefore, is more ſtudious to make the moſt of the labour that he can command, than to raiſe great crops from a ſmall portion of ſoil. Having abundance of fertile land to waſte, he finds it more profitable to turn over negligently, with as little toil as poſſible, a large portion of it, than to labour any part of it perfectly. In this way he derives the greateſt benefit from his own perſonal induſtry, or from the labour of thoſe perſons whom it is in his power to engage for hire. This negligent mode of cultivation, however, is laid aſide in the neighbourhood of the great towns, where land is valuable and dear; and it prevails in proportion to the remoteneſs of the ſituation, and the facility with which land is obtained.

462 They flood the land.

In ſome places, in conſequence of the multitude of ſtreams that are to be found in America, the valuable practice of flooding land is adopted; and the American huſbandmen are ſaid to practice this branch of the art of agriculture with conſiderable ingenuity and induſtry. Inſtead of attempting to level their ground, however, they manage to convey conſiderable ſtreams of water through the valleys to the ſummits of the eminences, or high grounds, by means of tubes or pipes, formed of the trunks of trees bored or hollowed out. In other reſpects, however, the practice of American huſbandry is undoubtedly very imperfect. Even in thoſe parts of the country in which timber has become dear, the

America. the Americans ſtill continue from habits to uſe wooden fences. No ſuch thing as a hedge is to be ſeen in any
463 No hedges. of the ſtates. The farmers ſay, that the thorn does not thrive in their climate. This point has not perhaps been well aſcertained by experiments; but there can be no doubt, that out of the endleſs variety of native plants and ſhrubs, ſome might eaſily have been found that are capable of being uſed as a living fence. All the cultivated fields at the firſt clearing of the ground are incloſed with fences, which conſiſt of poles of wood once ſplit and laid zig-zag upon another without any ſtakes. Theſe fences are afterwards exchanged for regular palings of different kinds of wood, which are neceſſarily attended with all the defects of that mode of attempting to ſecure either corn or ſtock; running rapidly into decay, and requiring conſtant repairs.

464 No ſtacks of grain. The Americans have an expenſive mode of ſecuring their grain. Inſtead of building it up in ſtacks, they are at the trouble of bringing it all into houſes or barns. They ſay, that it would not be ſecure in ſtacks againſt the ſudden and violent torrents of rain that occur in their climate; an error into which they have undoubtedly been led by building and covering their ſtacks in an unſkilful and improper manner. They do not reap their grain with the ſickle, but cut it down with the ſcythe, which muſt undoubtedly produce conſiderable waſte. But this is perhaps done from neceſſity, in conſequence of the high price of labour, or rather the difficulty of obtaining a ſufficient number of labourers to perform this work in another manner. Inſtead of thraſhing, they uſe in many places, and particularly in Virginia, the ancient cuſtom of treading out the corn by means of cattle, by whoſe feet it muſt, no doubt, be conſiderably bruiſed and damaged.

465 New ſettlements, how formed. The ſimpleſt and leaſt artful kind of American huſbandry is that practiſed in the formation of new ſettlements. When a family have come to a reſolution to ſettle in a particular diſtrict, they uſually proceed in the following manner: The huſband in the latter end of ſummer repairs to the ſpot where the ſettlement is to be made. The firſt thing he does is to cut down the ſmall trees on one or two acres. He next barks the larger trees. This laſt operation conſiſts of cutting off a circle of bark from the tree all round with a hatchet, penetrating at the ſame time a ſhort way into the wood; the effect of which operation is, that on the following year, the tree produces few or no leaves to prevent the ſun from reaching the ſoil. In that climate, trees thus barked or girdled ſpeedily decay, and in a few years are overturned by any ſtorm; after which they can be burnt with little trouble on the ground. Among the trees thus barked, and upon the ground that has been cleared, the new ſettler breaks up the ſoil, by dragging along it a common harrow with iron teeth. Without farther preparation, and without the uſe of a plough, he ſows wheat or rye. Wheat thus ſown produces from 20 to 25 buſhels an acre, of an excellent quality; and, in conſequence of the great fertility of the ſoil, and its natural ſoftneſs, being wholly formed of rotten leaves and graſs, good crops of wheat are obtained with no greater degree of induſtry during ſeveral years in ſucceſſion. Having ſown his grain in this way, the ſettler, with the wood which he has felled, conſtructs a ſmall log-houſe, and makes ſuitable fences around it; a labour which may be performed in about a month's time; after which, the rest [illegible] left to itſelf for the winter. It is to be obſerved, that a log houſe is built by laying trees upon each other at right angle in [illegible] ſides, each [illegible] the interſtices being filled up with [illegible] only with loam, and the roof covered with [illegible] turf. A chimney is uſually built, in one corner, of ſtones and clay. In the beginning of ſpring, the adventurer brings his family and the beſt of his cattle to his new ſettlement. His cows are turned into the woods to graze. He plants potatoes, and [illegible] Indian corn, and thus is enabled to provide for the firſt year's maintenance. While thus employed, he is at the ſame time clearing more ground, burning the trees he has already felled, and, as far as may be, even those which he has barked. The aſhes afford a very uſeful manure; and in the opinion of the beſt judges, are employed in this way to much greater advantage than when converted into potaſh, the making of which is with the new ſettlers merely the reſult of neceſſity. For if a ſaw-mill be at hand, the large trees are conveyed thither by oxen. Thus, within the ſpace of twelve months, a man may clear 15 acres; and few families cultivate more than 30. The barked trees are left ſtanding for a longer or ſhorter time, according to circumſtances, viz. the ſpecies of the tree, the nature of the ſoil, and the degree of the wetneſs of the ſeaſon. The hemlock fir will ſtand eight or nine years, the oak four or five, the maple three or four; and trees, all the branches of which have been burnt off, ſeldom fall before this time. The ſtumps of the felled trees, generally two or tree feet high above the ground, hardly rot ſooner than the barked trees which have been left ſtanding on the lands. Salt pork and beef are the uſual food of the new ſettlers. Their drink is water and whiſky; but there are few families unprovided with coffee and chocolate. The axe which the Americans uſe in felling trees has a ſhorter handle and a ſmaller head than that of European wood-cutters; and they aſſert, that they can do more work with this ſhort-handled light axe than with the European.

The Americans appear to entertain fewer local attachments than the peaſants of Europe; and accordingly, emigration with them is extremely common. Some families make a buſineſs of forming new ſettlements in the way now mentioned. After building a houſe, forming encloſures, cutting down a part of the wood, and putting every thing into a decent train of cultivation, they ſell the ſettlement which they have formed with ſo much labour, and proceed farther into the woods, to commence anew the ſame career of hardſhip and of induſtry. By theſe operations, they never fail to earn a very conſiderable profit, on account of the additional value which the land acquires by their efforts in the eyes of perſons of greater property. The ſame kind of undertakings, however, are alſo engaged in by men of a vagrant and reſtleſs character, who delight in an idle life, the greateſt part of which is ſpent in hunting. Theſe men keep upon the frontiers of every new colony, and as ſoon as their amuſements begin to be reſtrained by ſettlers occupying the country round them, they immediately ſell their plantations, and proceed to more remote ſituations; thus becoming a kind of voluntary [illegible]

America. from civilized ſociety. In theſe undertakings, there is uſually little perſonal hazard, as the wild animals are leſs fierce in America than in other parts of the globe. Wolves, bears, nay even panthers, uſually fly before man; and the inſtances of their doing miſchief are ſo rare, that the very reality of it might be doubted. The ſevereſt misfortune to which the inhabitants of the American foreſts are liable is the loſs of their children in the woods. Theſe unfortunate infants, over whom it is almoſt impoſſible to keep conſtantly a watchful eye, are apt to run out of the houſe, which is ſeldom fenced the firſt year, and, ſtraying from their houſes, are unable to find them again. In ſuch caſes, however, all the neighbours join in the ſearch, and ſometimes the children are found. But there are alſo inſtances of their being totally loſt, or diſcovered only when dead of hunger or fear.

466 Children apt to be loſt in the woods.

467 Cattle uſed in agriculture.

Both horſes and oxen are uſed in agriculture in America. In ſome places, however, they have at times found it neceſſary to confine themſelves excluſively to the uſe of the latter, becauſe they are ſubject to no diſeaſe in that country. Whereas in Pennſylvania, New York, and elſewhere, almoſt the whole horſes are ſometimes carried off by a weakneſs which deſtroys them in the courſe of two months. The liver is blown up by a ſwelling, which extends into the legs and the whole maſs of blood, and is called the yellow water. It is ſaid, that in the ſtate of Virginia the Arabian horſe, with a very moderate degree of attention, thrives as in his native climate, and without degenerating. Southwardly, the heat of the ſun occaſions a deficiency of paſture; and northwardly the winters are too cold for the ſhort and fine hair, and the particular ſenſibility of conſtitution of that race. Their patience of heat fits them, in that and the ſouthern climates, even for the drudgeries of the plough; and numbers of them are exported from thence to the Weſt India iſlands, as articles of luxury to the wealthy planters there.

468 Sheep.

Very few ſheep are reared by the American farmers. The wool is of a good enough quality; but there is little or no demand for it, unleſs for the ſupply of ſome manufactories of hats. The mutton is in general not good; the carcaſes being very large, and the fleſh coarſe from being fed on the high rank graſs of the American paſtures. Accordingly few farmers keep more than 18 or 20 to ſupply wool to be manufactured in their own families. Great numbers of ſwine are kept by the Americans. This is ſaid to have ſoon become a very favourite kind of ſtock among the earlieſt ſettlers in the country; from the delight which they found the ſwine took in hunting out and devouring all kinds of ſerpents, with which the country abounded, and which were objects of great terror to perſons newly arrived from the cultivated countries of Europe, in which theſe reptiles are more rare.

469 Swine.

470 Grain.

The kinds of grain cultivated in America are nearly the ſame with thoſe reared in Europe, with ſome additions. A regular ſucceſſion of crops is deſcribed by an American writer, as uſed in recruiting worn-out lands. In Maryland and Virginia, they have long been in the practice of ſowing a pint of the beans of the *cytiſus cajan* with every buſhel of oats on poor lands. The oats ripen, and are cut in July, when the beans are young, and eſcape the injury of the ſcythe. They flower in August and September. In October the leaves fall off; the ſeeds ripen, and the pod opens with ſuch elaſticity as to ſcatter the beans to ſome diſtance around. The year following the field is cultivated with Indian corn, which is ſown in drills. The beans which ſprout early are all deſtroyed by the plough and the hoe; but the more numerous part not making their appearance above ground, till the culture of the corn is ended, ſpring up unhurt by the inſtruments of agriculture, and furniſh ſeed for the enſuing year, when the field is again ſown with oats. By this alternate cultivation of Indian corn and oats with beans, the land is ſo far improved by the rotting of leaves and ſtalks of the beans, that the product is 15 buſhels to the acre, on ſuch as prior to this management would not have produced more than five. The American huſbandmen are alſo of opinion, that the common field pea is preferable to every thing elſe for improving land, if the vines or ſtraw be left to rot on the ground, inſtead of being given to cattle for fodder. America.

471 Indian corn.

Indian corn or maize everywhere forms a conſiderable article of the produce of American huſbandry. The mode of rearing it is ſimple. Holes are made in the field, four feet aſunder every way, and ſo as to form ſtraight lines, for the conveniency of hoeing, or ploughing. In every hole are put five or ſix grains previouſly ſteeped in water, to make them ſpring up the quicker. By day people are placed for a ſhort time, to guard them againſt birds, and by night, fires are kept up till the corn has ſprung, to frighten away the fox, who would otherwiſe turn up the ground, and eat the corn of all the rows one after another. As ſoon as the corn has ſhot out of the earth, when it mounts up, the earth is drawn towards its root, to ſtrengthen it againſt the wind. Five or ſix ears are commonly found on each ſtalk. The grains are nearly of the ſize of a pea, and 700 grains are commonly found upon one ear. A light black ſoil agrees better with it than a ſtrong and rich one. The grain is uſed in various ways, but chiefly in the form of a kind of porridge or gruel. Bread is alſo made from it, and it is ſometimes uſed in diſtillation.

472 Wheat.

As in Europe, wheat is regarded as the moſt valuable kind of grain. In Virginia, however near the ſea coaſt, the cultivation of it is not a little diſcouraged by an inſect called the *weavel*. This is a worm whoſe eggs are almoſt conſtantly depoſited in the ear of the grain. A ſlight degree of heat greater than that of the common atmoſphere in ſummer kills it, and is endeavoured to be obtained in the following way: The grain is thraſhed as ſoon as it is cut, and laid up in its chaff in large heaps. The heat which is ſpeedily produced deſtroys the vital principle of the egg, and protects the corn from the inconveniences of its being hatched, while at the ſame time the chaff ſufficiently reſtrains the heat from riſing into putrefaction. If the grain continued in the ears without being ſpeedily thraſhed, it would be deſtroyed by the worm which would be excluded from the eggs. This ſcourge, however, ſpreads no farther northwards than the Potowmack, and is bounded to the weſt by the ridge called the Blue Mountains. A few weeks after the wheat has been beaten or trodden out by horſes, it is free from all danger, is winnowed, and ſent to market.

473 Tobacco.

Tobacco continues to be cultivated to a conſiderable extent

America. extent in Virginia, and the ſtates to the ſouthward. It is yearly, however, giving place to wheat, which is of infinitely more value to the country, as having a leſs tendency to impoverith the ſoil, and contributing in a more direct manner to the encouragement of population. The culture of tobacco, on account of the conſtant attention and labour which it requires under a burning ſun, is chiefly performed by negroes. It is difficult, troubleſome, and uncertain. It is ſown in the month of March, in a fat and rather moiſt ſoil. Before the time of ſowing, the land is covered with ſmall branches of trees, which are burnt for the purpoſe of deſtroying the herbs and roots that might injure the growth of the plant, and alſo in order to increaſe the fertility of the ſoil by their aſhes. The tobacco is thickly ſown on a bed in the moſt ſheltered corner of the field. This bed is covered with branches, leſt the froſt ſhould hinder the unfolding of the ſeed, and prevent the ſprouting of the plants. When they are three or four inches high, they are tranſplanted into a field, which has been well manured and prepared for their reception. A negro heaps earth around the plants, which are ſet four feet diſtant from each other on all ſides. The ground is conſtantly kept clear of weeds, and all the leaves are taken from the plant, which it is thought might injure its perfect growth, beginning always with thoſe that are next the ground, and which might be affected by the wet. More earth is heaped around the ſtalk, and its head bruiſed with the nail to prevent its running up too high. All the ſprouts which ſhoot forth below the leaves are cut away, and all the leaves ſucceſſively torn off, except eight or nine, which alone are left on the ſtalk. At laſt, when the plant is ſuppoſed to be ripe, which happens in the month of Auguſt, it is cut, left ſeveral days in the field to dry in the ſun, and then carried into the barns, where every plant is ſuſpended by its undermoſt part. In this poſition the leaves attain by deſiccation the laſt degree of maturity, but not all of them at the ſame time; for this deſiccation, which, in regard to ſome, is completed within two days, takes, with reſpect to others, ſeveral weeks. When the leaves are perfectly dry, they are taken from the ſtalk, and laid one upon another in ſmall parcels. The moſt perfect leaves muſt be put together, and thoſe of an inferior quality ſeparated into different claſſes: this is at leaſt the method followed by ſuch planters as pay moſt attention to the fabrication of their tobacco. Theſe ſmall parcels of leaves, tied together by their tails, are then brought under the preſs, and afterwards preſſed down into hogſheads. This proceſs varies more or leſs in the different plantations, but the variations are not by any means conſiderable. The ſeed for the next year is obtained from 40 or 50 ſtalks per acre, which are ſuffered to run up as high as they will grow without their heads being bruiſed.

The ſorts of tobacco cultivated in Virginia, are the *ſweet ſcented*, the moſt eſteemed of all; the *big* and *little*, which follow next; then the *Frederick*; and, laſtly, the *one-and-all*, the largeſt of all, and which yields moſt in point of quantity. A negro can cultivate two acres and a half; and, as each acre yields, upon an average, 1000 pounds of tobacco, each negro can conſequently produce 2500 pounds. But the culture of this plant is, as has already been ſtated, extremely troubleſome. It is expoſed to a great variety of accidents, which cannot always be avoided, and which deſtroy many ſtalks, or ſpoil at leaſt many leaves. After the plant has been tranſplanted, the root is frequently attacked by a ſmall worm, which cauſes the leaf to turn yellow, and which muſt be taken out of the ground with the fingers, to ſave the plant. Humidity communicates *the rot* to the plant, that is, covers it with red ſpots, which cauſe it to moulder away, and the ſtalk is loſt. Violent winds are apt to break the ſtalk. When the leaves are at the point of attaining their maturity, horn-worms neſtle in them, attack them, and completely deſtroy the plant, unleſs they can be torn off. Laſtly, When the tobacco is cut and ſpread on the ground to dry, the wet impairs its quality. America.

Indigo and cotton are alſo cultivated in ſome of the ſouthern ſtates. Cotton in particular is exported from Charleſtown in conſiderable quantities; and of late it has been brought down the river Miſſiſippi, from Kentucky and other ſettlements to New Orleans, in ſuch abundance as to form an important article of commerce. Indigo and cotton.

In South Carolina, rice is cultivated to a great extent. That country is divided by nature into Upper and Lower. The latter, which is the eaſtern part, adjoining to the Atlantic ocean, extends inward almoſt 100 miles. The land in this low diſtrict conſiſts of marſhes and ſwamps, interſperſed with a little high land. The marſhes are a ſecond-rate land, which produces a coarſe kind of graſs in very great abundance. Little attention is paid to them, though they could in general be drained and cultivated. The high land is alſo neglected for the ſake of the ſwamps, which are the moſt valuable kind of ſoil, conſiſting of a rich black clay, or fine black earth, to the greateſt depth. The rice which is cultivated upon them is ſown in April and May. The ground is turned up eight or nine inches deep in furrows, into which the rice is thrown by a woman; and the negroes, who alone are employed in this cultivation, fill up the furrows. The ſeed ſhoots up in 10 or 12 days, according as the ground is more or leſs wet. When the blade is from ſix to ſeven inches high, and after the negroes have cleared away the weeds, the water is made to flow over the field, ſo that no more than the tops of the blades can be ſeen. In three or four weeks the water is let off, and the negroes take away the remaining weeds. The field is covered again with water, which is drawn off when the yellow colour of the ear and the hardneſs of the ſtalk denote the ripeneſs of the rice. It is then cut and kept in ſtacks till winter. It is afterwards threſhed, and put into a ſmall wooden houſe, with ſeveral ſome feet high, and reſts upon four pillars: and in the ceiling of which is faſtened a large ſieve, which ſeparates it from the other parts, and the wind clears it perfectly before it falls to the ground. The rice, after being thus cleared, muſt be freed from the firſt ſhell that ſurrounds it. For this purpoſe, it is carried to a mill, the grinders of which are made of fir, and are about four inches thick, and two and a half in diameter. One is moveable, the other fixed. They are both ſcooped out in an oblique but concentric form. Againſt the edges thus formed, the rice is preſſed; and by that means ſeparated from the huſks. Theſe mills are turned by a negro. On account of the rapid mo- Rice.

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America. tion and the ſoft wood of which they are made, they do not laſt longer than one year. The rice is winnowed as ſoon as it comes from the mill, but ſtill it has a ſecond ſhell which muſt be taken off, and this is done by the negroes pounding it with clubs. Theſe clubs, however, are ſometimes put in motion by machinery turned by oxen. After the rice is pounded, it is winnowed again to cleanſe it from the ſecond ſhell; and it is put into another ſieve for the purpoſe of ſeparating the ſmall from the larger grains. The laſt only are ſaleable. Whether the ſeparation is carefully made or not, muſt depend on the honeſty of the planter; and, during the late dearth of proviſions in Europe, when the rice bore a higher price, it is ſaid that they were not very ſcrupulous in this reſpect. The rice deſtined for ſale is packed up in barrels, offered for the inſpection of the officer appointed for that purpoſe, and then exported. During its growth, the rice is expoſed to ſeveral dangers, which render the crop uncertain. Before the blade grows up, it is attacked by ſmall worms, which gnaw the root. It is alſo frequently injured by little fiſhes that live in the water which covers the ſwamps. Againſt them the rice is only defended by the heron (*ardea alba minor*) which feeds on theſe little fiſhes and worms; and on this account is ſpared by the planters, as the turkey-buzzard is by the town's people. When the rice is ripe, it is aſſailed by innumerable quantities of ſmall birds, which are known in Carolina by the name of *rice birds*. The young negroes are continually kept beſide the fields to frighten them away; but theſe voracious birds cannot be entirely kept off. The rice ſwamps yield between 70 and 80 buſhels of rice an acre, according to the quality of the ſoil. Sometimes 120 buſhels have been produced from an acre; but inſtances of this kind have been rare. Twenty buſhels of rice, with the ſhells, weigh about 500 pounds. Without the ſhells, theſe 20 make but eight buſhels; without, however, loſing much in weight. The ſtraw is given to oxen and horſes.

It will eaſily be believed, that the cultivation of rice has a tendency to render a hot climate, in which alone it can be practiſed, extremely unhealthful. The inhabitants accordingly, in the warm and damp climate of South Carolina, ſuffer ſeverely every autumn from malignant bilious fevers, which cut them off in great numbers. When originally introduced, this conſequence was not foreſeen; but it now maintains its ground, from the difficulty of altering an eſtabliſhed ſyſtem of induſtry. It will probably, however, be ſuppreſſed in the courſe of time, as white men will not engage in the operative part of the cultivation; and the unaſſiſted labour of negroes is always expenſive, which prevents the cultivation of it from being attended with any great degree of profit. The American rivers alſo being ſubject to violent inundations, which they call *freſhes*, often ſweep away the whole harveſt, together with the woods and fences which ſurround the rice fields.

The country irregularly cultivated. The lands that have been brought under cultivation in America do by no means extend in a regular progreſs at equal diſtances from the ſea coaſt or from the older ſettlements. In conſequence of the ſuperior goodneſs of the ſoil, of the ſuppoſed ſalubrity of particular parts of the country, or of ſpeculations by purchaſers of land, who have held out unuſual encouragements to new ſettlers; very remote diſtricts are in many places inhabited, while others at a leſs diſtance from the ſeat of the original colonies, ſtill remain in a ſtate of nature. In general, however, the progreſs of emigration neceſſarily muſt be towards the weſt, and from choice it uſually is from the north to the ſouth. The ſhortneſs of the winter in the ſouthern territories of the union, affords a great temptation to this courſe of things, on account of the heavy tax which is impoſed upon human induſtry, by the neceſſity of ſtoring up great quantities of fuel for man, and food for cattle, in the more northern regions. In general, the great tract of the Alleghany mountains is left unſettled, and emigrants from the eaſtern parts of the union uſually proceed altogether beyond them before they think of ſettling. It has been computed that, in ſome years lately, no leſs than 30,000 perſons have croſſed theſe mountains in ſearch of new habitations. The ſtate of Kentucky, adjoining to the Ohio, has been the chief point towards which theſe emigrants have directed their courſe. They uſually proceed by land, acroſs the mountains, to Fort Pitt, which is 320 miles from Philadelphia. Families are conveyed thither in waggons, by perſons who engage in this employment, and take whole families of men, women, and children, and their goods, at ſo much *per cwt.* Near Fort Pitt, where many of the emigrants remain, boats are obtained at a trifling price, in which travellers commit themſelves to the ſtream of the Ohio, which conveys them downwards to theſe remote regions. Other emigrants travel towards the ſame place by land, through the high country of Virginia, ſome of whom advance into the new ſtate of Teneſſee, that has been formed in the back parts of Carolina. Of the immenſe territory beyond the Ohio, very little is yet occupied, though the ſuperior mildneſs of the climate and the fertility of the ſoil begin to draw emigrants thither from the eaſtern ſtates.

477 Houſes. Of the principal cities and towns of the American union, we ſhall take notice in ſeparate articles. In the mean time, it may be obſerved, that the kinds of houſes uſed in America are no leſs various than the ſituations of men in that country, from remote and ſolitary families in the woods, to wealthy citizens who inhabit elegant dwellings in the ſtreets and ſquares of populous towns. In general, however, houſes of all kinds throughout the country of America are formed of timber. We have mentioned the log-houſes which the firſt ſettlers erect. Theſe are ſubſtantial habitations, though uſually very clumſy. They are generally replaced by handſome houſes, finiſhed by carpenters, with chimneys and ovens formed of brick. The towns in the ſouthern ſtates, being built in this way, have repeatedly ſuffered great calamities by fire. The fear of this evil, together with the increaſing price of timber, has introduced in the northern ſtates very extenſively the uſe of brick for building. Accordingly the city of Philadelphia, containing nearly 80,000 inhabitants, and which is ſaid to be one of the moſt regular and beautiful in the world, has now a very great proportion of its houſes built with brick. They are ſtill, however, not a little expoſed to accidental fires, as their roofs are formed of ſhingles or boards, ſo placed as that the lower edge of each overlaps the upper part of the board immediately below it, in the way that ſlates or tiles

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America. are laid upon each other to cover the roofs of houſes in Europe. Theſe roofs, and alſo the whole outſide of the wooden houſes, are uſually very neatly painted. One conveni nce that attends the uſe of wooden houſes is, that, as they are not lofty, and their ſtructure is very ſlight, if a man who has only a ſmall houſe diſlikes the place of the town in which he lives, he can remove his dwelling to a more agreeable neighbourhood. The furniture is taken out, the brick chimneys are taken down, and the houſe is mounted upon very low but very ſtrong carriages, formed for the purpoſe, and is wheeled away to it new ſituation in any other ſtreet, where ground for the purpoſe has been procured. When the chimneys are erected, the transference is complete.

478 Religion. In the United States, religion does not form, as elſewhere, a part of the political eſtabliſhment of the country, but is rather to be regarded as connected with the ſtate of manners, ſcience, and character of the people. In conſequence of the entire freedom of religious opinion and worſhip which has for many years been enjoyed in America, all the varieties of ſects have eſtabliſhed themſelves there, though nobody has departed from the public profeſſion of Chriſtianity. In general, however, religion is conſidered as an object of more importance in the northern than in the ſouthern ſtates. Accordingly, the emigrants from the New England colonies, who are the moſt numerous of all, never fail very ſpeedily to eſtabliſh religious meetings or churches in their new ſettlements. Throughout the ſtates, the prevailing forms of religious worſhip are thoſe of the Church of England, and of the Preſbyterians. The Independents are alſo numerous. In Pennſylvania, the greateſt variety of religious denominations prevails; but the Quakers are the moſt numerous. They were the firſt ſettlers in that ſtate in 1682, under William Penn; and maintain in that country the reputation which they have acquired in England of ſoberneſs, induſtry, humanity, punctuality in their dealings, and ſtrictneſs in the obſervance of all the peculiarities of dreſs, ſpeech, and manners, that their religious opinions enjoin.

479 Moravians. The Moravians (ſee *Unitas Fratrum*), have made ſeveral eſtabliſhments in Pennſylvania and elſewhere. That at *Bethlehem*, 53 miles north of Philadelphia, is the oldeſt and the moſt conſiderable. In 1740, Count Zinzendorff purchaſed the diſtrict, and ſoon brought to it 140 Moravian brethren and ſiſters from Germany. They held every thing in common: but ſuch was their zeal, that the men ſoon cleared the woods, made roads, and reduced the lands into cultivation, while the women prepared their clothes and victuals. The ſyſtem of common property was afterwards done away, excepting as to certain objects, ſuch as corn mill, a tannery, a tavern and buildings, which belong to the whole community. The town of *Bethlehem* is inhabited by 500 or 600 perſons, all of the brother or ſiſterhood. They are divided into five departments, each under the direction of an inſpector or inſpectreſs; and the temporal adminiſtration of the ſociety is in ſome degree mixed with its diſcipline. The unmarried brethren live together in a ſeparate houſe; that is, they eat and ſleep there, but they do not work there if they can work elſewhere. The money they earn is their own, but they muſt pay for their board and their proportion of the public taxes. The inſpectors ſupply them with work if they cannot find it elſewhere. Thus the brethren coſt nothing to the ſociety at large. The ſame is the caſe with regard to the unmarried ſiſters, ſome of whom are employed as ſervants and cookmaids in the houſes of the town, where they receive board and lodgings. They pay a certain ſum to the ſociety, which preſerves their right of entering into the unmarried ſiſters houſe when they pleaſe. In this houſe moſt of the ſiſters are employed in ſewing and embroidery, and are paid for their work by the inſpectreſs, who ſells it for the benefit of the houſe. The widows houſe is ſupported by the brethren, and the widows themſelves contribute their whole labour, which is not ſufficient for its ſupport. They have a ſchool or academy which enjoys ſome reputation. The married people live in their own houſes. No communication is allowed between the young men and the young women. When a young man wiſhes to marry, he mentions to the inſpector the girl of whom he has made choice, but to whom he has never ſpoken. The inſpector applies to the inſpectreſs of the girls, and if ſhe judge the young woman's character not incompatible with that given of the young man by the inſpector, the girl is applied to, who may refuſe, but is not allowed to ſay whom ſhe would prefer. If an unmarried brother and ſiſter are detected in a correſpondence without marriage, the matter is kept ſecret by the rulers of the ſociety, but the parties are never allowed to marry each other. They are all of German extraction, and ſpeak that language; but their numbers are not increaſing, notwithſtanding the fecundity of the American women, of which the Moravian married ſiſters have their ſhare. They have other ſettlements in the ſame ſtate, particularly one at Nazareth, 10 miles north from Bethlehem, and another at Litiz, in Lancaſter county. They are alſo ſettled in New Jerſey and North Carolina. There is a general directory of the whole ſociety for America, which correſponds with the general college of the ſociety in Europe, that meets at Hernhutt in Upper Luſatia.

480 Shakers. At Lebanon, in the ſtate of New York, a religious ſociety is eſtabliſhed, of a ſingular nature, called the *Shakers*. This ſociety is a republic governed in a deſpotic manner. All the members work for the benefit of the ſociety, which ſupplies them with clothes and victuals, under the direction of the chief elder, whom they elect, and whoſe power is unlimited. Subordinate to him are inſpectors of all claſſes, inveſted with different degrees of authority. The accounts reach him in a certain regular gradation, and his commands are conveyed in the ſame manner. It would be an unpardonable breach of order to addreſs the chief elder himſelf, unleſs the addreſſer belongs to a claſs which enjoys this privilege. Marriage is prohibited in this ſociety, which has been recruited merely by proſelytes for 80 years. Married men and women are admitted into the ſociety, on condition that they renounce each other; and they frequently bring their children with them, who in this caſe are conſidered as belonging to the ſociety. They make cloth, gauze, ſhoes, ſaddles, nails, cabinet work, and in ſhort every article that finds a ready market. They ſell their commodities in the neighbouring towns, and the women perform ſuch buſineſs as is generally allotted to their ſex. The ſociety poſſeſſes conſiderable

America. property, the amount of which, however, is known to none but the chief elder. They are an honeſt, good-natured people, are faithful workmen, and very moderate in their prices. Of any peculiar doctrines entertained by them little is known, excepting, that the ſect was founded by a woman, called *Anna Leeſe*, whom they ſtyled the *Elect Lady*. They aſſert, that ſhe was the woman ſpoken of in the 12th chapter of the Revelations, that ſhe ſpoke 72 tongues, and could converſe with the dead. Their worſhip conſiſts of little more than a ſet of whimſical geſticulations performed upon a ſignal given by the chief elder, along with the chanting of ſome hymns known only to themſelves. This ſociety has nothing in common with the Quakers.

451 Tunkers. At Ephrata, 60 miles weſtward of Philadelphia, is the ſettlement of what are called the *Tunkers* or *Dunkers*, (ſee TUNKERS, or DUMPLERS.) They are a kind of Baptiſts, but profeſs a ſtrange medley of tenets. They were inſtituted in this place by one *Conrad Peyſel*, a German. He collected them into a ſociety, and conducted them to Pitſburg, which at that time was a wild uninhabited place. The chief of the community who ſucceeded Peyſel, having made ſome alterations in their diſcipline, diſſenſions took place; they diſperſed, but afterwards united again in the ſame place where they were firſt eſtabliſhed. A community of property is obſerved among them, and they make a vow of poverty and chaſtity. This vow is not always kept; as ſome of them quit the ſociety and marry, which it cannot prevent their doing, as the law regards ſuch vows as not obligatory. They lament the fall of our firſt parent, who would rather have for his wife, a carnal being, Eve, than let the celeſtial Sophia, a being thoroughly divine, bear a child. She would have communicated only with the ſpiritual nature of Adam, and thus a race would have been engendered all pure and without the leaſt corporeal ingredient. They lament the indulgence which God ſhowed in regard to this deſire of Adam; however, God, according to their doctrine, has merely deferred the period of this ſtate of perfection. It is certainly to arrive, and the Tunkers foreſee the time, when, after the general reſurrection, the divine Sophia will deſcend into every one of us.

Three diſtinct races of men continue to inhabit the territory of the United States. Theſe are the Indians; the Negroes, who were introduced as ſlaves from the coaſt of Africa; and the Whites, of European extraction. The Indians, who were the original inhabitants of the country, have now been expelled from a very large portion of it, and their numbers are rapidly decreasing. "It is a melancholy reflexion, (ſays the American ſecretary at war, in a memorial addreſſed to the preſident in 1794), that our modes of population have been more deſtructive to the Indian natives than the conduct of the conquerors of Mexico and Peru. The evidence of this is the utter extirpation of nearly all the Indians in the moſt populous parts of the union. A future hiſtorian may mark the cauſes of this deſtruction of the human race in ſable colours." The government of the United States has made ſome humane attempts to regulate the intercourſe of their people with the aboriginal inhabitants of the country. In 1796, a law was paſſed, with this view, which contains many ſalutary proviſions. It ordains, that the boundaries of the Indian territory ſhall be aſcertained and marked as clearly as poſſible. All perſons are prohibited to hunt upon the territory acknowledged by treaty to belong to the Indians, or to carry off cattle from it, on pain of a fine of 100 dollars, and ſix months impriſonment. None are allowed to enter the Indian territory without a paſſport. Any fraud, robbery, or other crime, committed againſt an Indian, is to be puniſhed by a fine and reſtitution, and the United States bind themſelves to ſee the reſtitution made, providing the Indian do not himſelf take vengeance for the injury; in which caſe he loſes his claim. To kill an Indian of any tribe in amity with the United States, is declared a capital crime. None are allowed to trade with the Indians without a licenſe, and thoſe to whom this privilege is granted are prohibited to purchaſe any implements of hunting, agriculture, or houſehold economy; and the troops of the United States are authorized to apprehend white men, who treſpaſs againſt theſe laws, even upon the Indian territory; and they may alſo be apprehended in any part of the United States where they are found. An Indian guilty of any crime may be apprehended within the territory of the United States. If he eſcape, the perſon injured by him may ſtate his complaint to the agent of the United States on the frontier of the Indian territory, who is to demand reparation from the tribe to which the offending Indian belongs, and to acquaint the preſident with the reſult of his demand. If reparation be not made, the injured party is indemnified from the treaſury of the United States, and the ſum thus applied is deducted from the ſubſidies granted by the United States to that tribe. The courts of the United States, and alſo, when the cauſe is not capital, the courts of the individual ſtates, take cognizance of offences againſt this law, even when they have been committed within the territories belonging to the Indians.

Another law enacted in the ſame year 1796, with a view to ſecure to the Indians fair treatment in their commercial dealings with the white people, eſtabliſhes a trade with them to be carried on under the authority of the preſident. One hundred and fifty thouſand dollars are appropriated to the trade, of which the objects are, to furniſh the Indians with ſuch ſupplies and implements as their wants require, and to purchaſe from them ſkins and furs. The law directs, that the prices of the articles ſold to the Indians be ſo regulated as barely to prevent the United States from loſing any part of their capital. It reſtrains the agents employed in their trade from trafficking directly or indirectly on their own account. It forbids them to cheat the Indians, and ſubjects them to fines of different magnitudes, in proportion to the nature of the offences by which they tranſgreſs theſe regulations. The diſtrict courts of the ſtate, where the ſtorehouſes are eſtabliſhed for the commerce with the Indians take cognizance of theſe offences.

452 Indians.

It is underſtood, that the juſt and liberal proviſions of theſe laws have never been punctually reduced to practice. The extremity of the United States, bordering on the territory of the Indians, is inhabited by a ſet of men who are in conſtant hoſtility with them. This claſs of inhabitants is univerſally admitted to conſiſt of the very worſt men in all America. The

453 The frontier ſettlers are always hoſtile to the Indians.

kind

America. kind of perſons who in Europe become robbers, thieves, poachers and ſmugglers; in ſhort, the reſtleſs ſpirits, of whom ſome exiſt in every community, who can never be confined to regular habits of induſtry, emigrate in America to the frontiers, and become voluntary exiles from ſociety and civilization. They live, like the ſavages, by hunting and fiſhing, or by other trifling exertions of induſtry; but more frequently, when they find it practicable, they engage in plundering the neighbouring Indians. Accordingly, where theſe are concerned, the ſentiments and even the idea of honeſty and humanity, are unknown to thoſe remote ſettlers. With very ſlight ſhades of diſcrimination between them, they are uniformly a plundering and ferocious banditti, who conſider an Indian as a being not belonging to the human ſpecies, and whom they may juſtly plunder or deſtroy. Hence it moſt commonly happens, in thoſe quarters, that neither accuſers, witneſſes, nor juries, can be found to convict a white man guilty of a treſpaſs or crime againſt an Indian. The oppreſſions, the uſurpations, and the crimes committed by the whites againſt the Indians are therefore never puniſhed, or at leaſt the inſtances of puniſhment are ſo rare, that it would be difficult to find an example of its having occurred.

The Indian, on the other hand, haraſſed and plundered by a ſet of men, the meaneſt of whom poſſeſſes more art and more powerful means of doing miſchief than himſelf, contracts the habit of robbery and pillage, of which he ſees the example, and is the conſtant victim. As he extends, according to the practice of ſavages, his vengeance to every individual of the ſame colour with the perſon who has injured him, the whites, even of the beſt character, are compelled, as a meaſure of ſafety, to hold themſelves in a ſtate of hoſtility againſt the Indians, and thus acquire a ſpirit of enmity towards them. This hoſtility uniformly ends to the diſadvantage of the original inhabitants of this great country, not only becauſe they are leſs ſkilled in war, but becauſe the loſſes of men which they ſuſtain are not rapidly repaired by reproduction, as happens to a civilized people, who know how to rear upon a fertile ſoil all the means of ſubſiſtence in abundance. It is not a little remarkable, that the Indians ſay, it is the worſt claſs of their whole tribes that habitually continue near the frontiers, engaged in a conſtant ſtate of fraud and violence.

The government of the United States does not poſſeſs upon its remote frontier ſufficient ſtrength to repreſs the irregularities now mentioned. The governments of the individual ſtates do not attend to them. Every perſon admits, that the evil ariſes principally and originally from the lawleſs aggreſſions of the whites; but as the evil is become habitual, and ſo inveterate that it is not eaſy to diſcover a remedy, it is uſually ſpoken of by the white Americans without horror. In the mean time, the Indians as a people are the only ſufferers by it. They are the weaker party. Every conteſt ends in their diſcomfiture, and every tranſaction tends to their diſadvantage; whereas the wandering and reſtleſs claſs of white men that conſtantly keep upon the frontier of the ſettled country are of eſſential ſervice to their country. They act as a kind of pioneers in preparing the way for the eſtabliſhment of perſons of better character, who gradually ſucceed them.

It is an eſtabliſhed opinion in America, among the America. moſt exempt from prejudices, that the Indians never can be civilized; that the fineſt education, the moſt aſſiduous and perſevering cares, cannot deſtroy their ſavage habits, to which they return with the moſt ardent paſſion, from the tranquillity and from the manners of the white people; and an infinite number of examples are cited, of Indians brought up at Philadelphia and New York, and even in Europe, who never ceaſed to ſigh after their tribe. The opinion that has been reared upon theſe facts has, no doubt, had a conſiderable effect in diminiſhing the exertions of benevolent perſons towards their civilization. It has been juſtly remarked, however, that we have no reaſon to be ſurpriſed by the conduct of thoſe educated Indians who reſumed their original habits. "The Indians," ſays the duke de la Rochefoucault Liancourt, "whoſe education has been attempted, or ſaid to be, had already paſſed ſome years of their life in the tribe to which they belonged. Tranſported alone from their ſpecies into the midſt of white people, different in language, habits, and in colour, and often even in clothing, they became as it were inſulated; they were regarded by the whites as a different ſpecies of men; they did not attempt even to make them forget that they were from a nation ſtill exiſting, whoſe manners and habits had rivetted their firſt attention, and made the deepeſt impreſſion upon them. If, when arrived at the age of manhood, they ſhould have imbibed for a white woman that affection which naturally created the deſire of an union with her, the difference of colour became an almoſt inſurmountable obſtacle. Is it to be wondered at, then, that theſe Indians ſhould wiſh to return to their tribe, of which they had ſtill the moſt lively memory, and where alone they were able to find companions of ſimilar manners to their own, and thoſe pleaſures which cauſe in man an attachment to life?" There are, however, in Connecticut, and in the ſtate of New York, a conſiderable number of Indians, both men and women, who ſerve as domeſtics in white American families, and who perform their duty as well and as faithfully as thoſe of any other race. One tribe only of Indians, the *Oneidas*, in the back parts of the ſtate of New York, on the ſhore of Lake Ontario, appears to have acquired what can be ſaid to reſemble civilization. They cultivate the ground with ſucceſs, and have a conſiderable number of villages. They are mild and peaceful, and kindly officious in performing little ſervices to the whites. On the whole, they are accounted excellent neighbours.

In the mean time it is evident, from the ordinary progreſs of things, that, unleſs the other tribes of Indians ſhall reſolve, which ſeems extremely unlikely, to ſubſiſt by agriculture, they muſt ſpeedily yield to the encroachments of American population and induſtry. In the territory of the United States, beyond the Ohio, which, with ſome trifling exceptions, is ſtill occupied by the Indians, it is believed there exiſts a population of about 50,000 ſouls. Between the head of the Ohio at Fort Pitt and the northern lakes, a few thouſands more are to be found. In the ſtates of Carolina and of Georgia, and Florida, belonging to Spain, about ten or twelve thouſand are ſtill to be found; ſo that, in the territory of the United States there is probably, in all, between ſixty and ſeventy thouſand Indians. The ter-

America. ritories occupied by the Indians are acknowledged to be their own, and that they cannot be taken away by force. But this affords no protection to these people. A little whisky will bribe their chieftans to give their consent to the largest transferences. It is perfectly common for great tracts of the finest territory in the world to be bartered away, with the consent of all parties, for a few rings, a few handkerchiefs, some barrels of rum, and perhaps some money, which the unfortunate natives known not how to convert to any valuable use. The European nations and their descendants have long been accustomed to regard all the world as their property, and the rest of mankind as a kind of intruders, or an inferior race, whom they have a right to dispossess when it suits their conveniency. We are apt to treat as absurd the right which the pope, as high priest of the European states, once claimed, to give away at his pleasure whole empires, and immense tracts of unknown territory which never belonged to him; but the conduct of the parties to the treaty of Paris in 1783 was probably neither less unjust nor less absurd, when the king of Great Britain gave up, and the American states were understood to acquire, a right of undisputed sovereignty over an immense territory inhabited by independent nations. The states of America, accordingly, consider themselves as possessing the supreme right to the property of the territory belonging to the Indians; and though they do not seize that territory by force, or transfer it by sale, they readily do what is nearly equivalent; they sell to private persons the right to purchase certain portions of it from the Indians. Thus the state of Massachusets sold to Messrs Phelps and Gorham the exclusive privilege of purchasing from the Indians a large territory upon the river Genessee, whenever they should consent to part with it. Messrs Phelps and Gorham sold this privilege of purchase to Mr Morris, who again sold it to the Dutch Company; binding himself at the same time to prevail with the Indians to relinquish their right to a certain part at least of the lands. Thus four different sets of purchasers succeeded each other in regard to an object concerning the sale of which the consent of the true original owners had not yet been obtained; and four different contracts were entered into, founded on the supposition, that it would be an easy matter to remove the Indians from those distant corners to which they had retired; a point about which their more polished neighbours were well assured.

484 Smallpox and intemperance fatal to the Indians.

The smallpox has at different periods proved extremely fatal to the Indians, and has greatly diminished their numbers. But the most dangerous enemy which they have to encounter is their attachment to spirituous liquors, which the whites cannot be prevented from selling to them, and which they cannot refrain themselves from purchasing. These liquors are peculiarly fatal to their strength and health, and daily render their marriages less prolific.—So that, from a complication of evils, the hostility and oppression of the neighbouring white people, the imprudent sales which they make of their territory, and the diseases to which they are exposed, the Indian tribes are gradually expatriated and decreasing in number. Every nation is now divided into different branches; the families are dispersed abroad; and whisky is rapidly diminishing the number of those which yet remain. A few years more, and these nations will disappear from the surface of the earth, as civilized people approach. America.

485 Negroes

Negroes originally imported from the coast of Africa, and held in slavery or emancipated, form another part of the population of the United States. The British nation, which refused to pollute its population at home by the existence of domestic slavery, had nevertheless tolerated the practice in its distant colonies, where the character of the people was accounted of less importance to the empire, and where the interests of commerce were regarded as the primary object of attention. In the convention which formed the constitution of the American union, the southern states were successful in obtaining an enactment in favour of the slave trade, which was couched in the following ambiguous terms: "The migration or importation of such persons as any of the states now existing shall think proper to admit, shall not be prohibited by the congress, prior to the year 1808; but a tax or duty may be imposed on such importation, not exceeding 10 dollars for each person." There are no slaves in the commonwealth of Massachusets; and this is the only state in the union that is entirely exempt from the disgrace of personal slavery. It was abolished in the following manner. No law in New England had positively authorized slavery; but it prevailed under the sanction of custom and of public opinion. Several laws indeed presupposed it; as they authorized the reclaiming of negroes who quitted their masters, enjoined the necessity of restoring them, and prohibited the intermarriage of blacks with free people. The new constitution of Massachusets, like those of the other states, declared an equality of rights for all men. In 1781, some negroes, prompted by private suggestion, maintained that they were not slaves, and they found advocates who brought their cause before the supreme court. Their counsel pleaded, 1st, That no law established slavery, and that the laws supposing it were the result of error in the legislators who had an authority to enact them; 2dly, They contended, that all such laws were annulled by the new constitution. They gained the cause upon both these principles; and, as there were only few slaves in Massachusets, all further idea of slavery was banished. But in the other New England states, under similar laws, and in similar circumstances, a contrary decision was given.

It is to be observed, that in 1778, the general census or enumeration of the population of Massachusets, included 18,000 slaves; whereas, the subsequent census of 1790, exhibits only 6000 blacks. It appears that a great proportion of the emancipated negroes went to the towns, where making an indiscreet use of their newly acquired freedom, many of them addicted themselves to the intemperate use of spirituous liquors, and died in consequence; others engaged as sailors even on board foreign ships. The generality of those who did not disappear became servants; some are tradesmen, or even farmers; and a tolerable number, considering their education and the habits which slavery produces, have attained to independence. They have not fallen under the lash of public justice more frequently than the whites, in proportion to the numbers of each class.

In the eastern part of Virginia, one-fifth of the population is still said to consist of Negroe slaves, and

America. farther ſouth where rice is cultivated, the proportion of negroes is ſtill greater. In Pennſylvania, and the other middle or northern ſtates, meaſures have been adopted for their gradual emancipation. Such meaſures have become popular, not only from the general temper of the age, but from the conviction now generally diffuſed of the tendency of domeſtic ſlavery to degrade the character of the free white men.

486 Whites. With regard to the whites, who form the third and laſt claſs of the people of this great country; it may be obſerved, that when the American conſtitution ordained the enumeration of the inhabitants of the United States, within three years after its acceptance, it enacted alſo, that the ſame enumeration ſhould be renewed every 10 years, and left it to the congreſs to make a law for regulating the manner of performing it. A law was accordingly paſſed for this purpoſe in 1790. The marſhal of every diſtrict, who is a kind of ſheriff, is ordered to ſuperintend the enumeration. In this work he may call in what aid he thinks proper. He muſt make a return to the preſident of the United States, diſtinguiſhing in the table of population, the number of free males under and over the age of 16 years; and alſo the free women and girls; and the ſlaves. The Indians are not included in the liſt of population. The liſts are exhibited upon public places, for the correction of the inhabitants, and the heads of families are required, under a pecuniary penalty, to ſtate correctly the number of their families. The whole enumeration is required to be performed in nine months. The total expence of it is eſtimated at 40,000 dollars every time it is made.

The enumeration of the people taken in 1791, by virtue of this law, announced a population of 3,929,326 inhabitants, of whom 3,231,629 were free. Among the free perſons were 57,707 negroes, or mulattoes. The ſlaves amounted to 697,691. By the lateſt enumeration, the population of the United States amounted to about 5,000,000.

487 National character. The character of the inhabitants of the United States of America is neceſſarily various, according to the climate which they inhabit, and the laws and hiſtory of the different ſtates. The uſe of ſlaves, in particular, has of itſelf produced a conſiderable effect upon the character and habits of the free men of thoſe parts of the empire in which they abound. Certain features of character, however, are in ſome meaſure common to the whole inhabitants of the ſtates; and it may be obſerved in general, that the Britiſh nation, which was the founder and the parent of theſe people, has no reaſon to be aſhamed of them. Indeed, in a country which belonged to Great Britain for a long time, which was peopled from it, of which the moſt numerous and neareſt connexions are yet with Great Britain, and which carries on with us almoſt all its commerce, the manners of the people muſt neceſſarily in a great degree reſemble our own. Accordingly, the American manners, particularly thoſe relative to living, are the ſame as in England, or the ſouth of Scotland; and New York and Philadelphia are faithful copies, in this reſpect, of Liverpool and of Glaſgow. As to the dreſs, the Engliſh faſhions are as faithfully copied, as the tranſmiſſion of merchandiſe from England, and the correſpondence of taylors and mantua-makers, will admit of. The diſtribution of the apartments in their houſes is like that of Great Britain. The furniture is Britiſh; the town carriages are either Britiſh or in the Britiſh taſte, and it is no ſmall merit in the fabricating world, to have a coach newly arrived from London, of the neweſt faſhion there. The cookery is Britiſh, and as in Britain, after dinner, the ladies withdraw, and give place to drinking wine, a cuſtom which the Americans carry at leaſt to as great a length as the natives of the parent ſtate. Indeed, frequent and ſumptuous dinners are ſaid to be held in as high conſideration in the new, as in the old world.

In the United States, the Britiſh character is modified by the ſituation in which the inhabitants of this new empire find themſelves. The moſt general qualities common to all Americans, are underſtood to be, intrepidity, an ardour for enterpriſe, a high opinion of themſelves, humanity, and a boundleſs love of gain. Theſe qualities, ſome of which are ſo apparently diſcordant, are nevertheleſs found to unite in the American character. They who conſider candidly the hiſtory of the war of the revolution, the inſtances of individual courage which they exhibited in it, and the perſeverance which the whole people diſplayed under repeated diſcomfiture, will be fully ſatisfied concerning their firmneſs and courage. Habituated to fatigue from their infancy, having for the moſt part made their fortunes by their labour and their induſtry, fatigue and labour are not yet become repugnant, even to thoſe in eaſy circumſtances. While they wiſh to enjoy the luxuries of life, they do not regard them as abſolute wants. They know how to diſpenſe with them, and to quit them and to travel in the woods whenever their intereſt requires it. They can forget them whenever a reverſe in the current of their affairs takes them away. They are not depreſſed by diſappointment, but inſtantly reſume the purſuit of fortune when ſhe has moſt cruelly deceived them.

Great pride of ſpirit, and a high notion of their own worth, are alſo ſtriking parts of the American character. A committee of the houſe of repreſentatives of the United States, appointed to prepare an anſwer to the addreſs of the preſident, in December 1796, gave a notable inſtance of this. Theſe gentlemen very modeſtly thought fit to call their countrymen *the moſt enlightened nation of the whole world;* and very great labour and long diſcuſſions, were neceſſary before the majority of the houſe could be prevailed upon to ſacrifice this ſuperlative, which it is ſaid would not have embarraſſed the modeſty of their conſtituents. No white American will ſo far degrade himſelf, as to conſent to accept of the ſituation of a domeſtic menial ſervant or footman. Hence it is ſaid, that throughout the whole extent of the United States, 20 native Americans are not to be found in the ſtate of domeſtic ſervants. This claſs of domeſtics in America, is compoſed of emigrant prieſts, Germans, and negroes or mulattoes. As ſoon as the former of theſe have acquired a little money, they quit a ſtation which they find to be regarded with ſuch contempt, and eſtabliſh themſelves in a ſmall trade, or upon land which they clear and cultivate. Hence it may eaſily be inferred, that a good domeſtic man ſervant is not readily to be found in America.

The prejudice which cauſes the men in America to have ſo great a repugnance to the ſtate of domeſtic

America. servitude, does not influence the women in the ſame degree. And accordingly, nothing is more common than to ſee young women of good families, in the ſituation of ſervants during the firſt years of their youth.

At the ſame time, it muſt not be imagined, that pure republican manners prevail in America. Though there are no diſtinctions of rank, formally acknowledged by law in the United States, yet fortune and the nature of profeſſions form different claſſes. The firſt claſs is occupied by the great merchants, the lawyers, the phyſicians, the clergy, and the land-owners who do not cultivate their land themſelves; the number of whom is ſmall from the ſtate of Delaware to the north, but is great in the ſtates of the ſouth, where ſlavery prevails. The ſecond claſs conſiſts of the inferior merchants, the farmers, and the artiſans. And the third claſs is compoſed of workmen, who let themſelves to labour by the day, the month, &c. In balls, concerts, and public amuſements, theſe claſſes do not mix; though, except ordinary labourers, and common ſailors, every one calls himſelf, and is called by others, a gentleman. A ſmall income is ſufficient for the aſſumption of this title, as it eaſily carries men from one claſs to another. It is ſaid, indeed, that the ſtruggle for rank between different claſſes produces, in the great towns, a very ruinous degree of oſtentation. In New York and Philadelphia, luxury is very high, and makes a dangerous progreſs every year, by increaſing the expence of living, and altering the public opinion with regard to what conſtitutes eaſy circumſtances and a competent fortune. Still, however, the inferior claſſes of workmen entertain a higher opinion of themſelves than elſewhere. They find the road to independence more practicable, and as the price of their labour is high, their circumſtances are eaſy, and they endeavour to throw aſide, as far as poſſible every appearance of ruſticity. They ſee all ranks of men engaged in buſineſs; they do not therefore account themſelves degraded by being compelled to labour, eſpecially as they find their ſkill and induſtry ſought after by others, while it is productive of affluence to themſelves; for in the United States there is not a family, even in the moſt miſerable hut, who do not eat butchers meat twice a-day at leaſt, and drink tea and coffee; nor is there a man who drinks pure water. Having heard much of the modes of living uſual among perſons of their rank in other nations, they are led to entertain an unbounded value for themſelves and their country.

Did not the practice of ſlavery ſtill ſtand in the way, the Americans would not be ſurpaſſed in the reputation of generoſity and humanity. When a brother or a ſiſter dies, leaving orphan children, they are readily adopted into the families of their uncles and other kindred, who treat them entirely as their own. This conduct is ſo common in America, that it meets with no praiſe, and is conſidered merely as the performance of the moſt ordinary duty, and as requiring no effort. Hoſpitality to ſtrangers is alſo exerted to a great extent, and in a way that even perplexes for ſome time the modeſty of an European. In caſes of unuſual calamity alſo, great liberality is diſplayed by them. The unfortunate ſufferers by the fires of Charleſtown and Savannah, and by the dreadful diſeaſe which raged at Philadelphia, New York, and other cities, were relieved by the abundant ſubſcriptions of the citizens of all the American towns where theſe diſaſters did not occur. The inhabitants of the French Weſt India iſlands who fled to the ſhores of America, in conſequence of the events of the late terrible revolution, were relieved by voluntary contributions, to the amount of more than 200,000 dollars. Whole families of them were ſupported for one or two years, according to their neceſſities, by individual Americans, in their houſes, merely becauſe they were unfortunate. There alſo exiſts a very conſiderable number of charitable ſocieties for various purpoſes, in the United States. Some of theſe are marine ſocieties, whoſe purpoſe is in ſome towns to provide a ſubſiſtence for the wives and children of thoſe who die at ſea, or to provide aſſiſtance to all veſſels wrecked upon their coaſts. There are alſo ſocieties for the aſſiſtance of emigrants, that is to ſay, for aſſiſting with advice and ſuccours thoſe ſtrangers who arrive from Europe, with an intention of eſtabliſhing themſelves in America. Others ſubſcribe for the ſupport of hoſpitals and ſchools, and for the diſtribution of proper medicines. There are ſocieties for the civilization of the Indians, and others for the purpoſes of ameliorating the ſituation of priſoners. Indeed, it is with regard to this laſt ſubject that the Americans are entitled to boaſt that the triumph of humanity has been more complete in ſome parts at leaſt of their country than anywhere elſe in the world. At Philadelphia, the adminiſtration of the priſons has been eſtabliſhed upon the moſt enlightened and beneficent principles, and is conducted with a degree of advantage to the public, and to impriſoned criminals, that has hitherto been unknown in the hiſtory of mankind. The jailors receive ample ſalaries; a conſtant inſpection is exerted over them, by the moſt reſpectable characters in the ſtate; the convicts are treated with the utmoſt mildneſs; yet licentiouſneſs is baniſhed, they are enabled to ſupport themſelves, and ſometimes to carry out with them a ſum of money, or to ſupport their families during their confinement; and in almoſt all caſes, the much wiſhed-for, but hitherto unattainable end, is ſaid to be gained, of rendering puniſhment the means of accompliſhing the reformation of the criminal. Such is ſaid to be the admirable effect of the humane and ſkilful management which has been here adopted, chiefly, it is underſtood, by means of the members of the ſect of Quakers; that, inſtead of the priſons containing what are called old offenders, it uſually happens, that of 100 convicts diſcharged, either in conſequence of pardons, or at the expiration of the term of their ſentence, there are never above two committed for new crimes, although impriſonment for a longer or ſhorter period is the only puniſhment adopted for all great crimes; no crime being capital excepting only wilful murder.

America.

But the moſt remarkable feature in the American character, and indeed their ruling paſſion, is a boundleſs thirſt after gain. This paſſion however, is in them altogether different from that timid and hoarding appetite which with us is ſometimes ſeen to quench all the energies of the human mind, and to extinguiſh every generous and liberal ſentiment. In truth, the avarice of an American is nothing more than the paſſion of ambition directed to the acquiſition of wealth

as

America. as the only means of attaining diſtinction in the ſtate of ſociety in which he is placed. Accordingly, he endeavours to gratify his love of riches, not ſo much by the ſlow and ſure mode of ſaving what he already poſſeſſes, and of ſuffering it to accumulate, as by entering into bold and hazardous ſpeculations, with a view to the ſudden acquiſition of fortune. If his ſpeculation is unſucceſsful, he thinks not the worſe of himſelf on that account, nor is diſcouraged from repeatedly encountering ſimilar hazards. If he is at laſt ſucceſsful, his wealth is uſed in ſuch a manner as evidently demonſtrates, that the love of riches has not fully engroſſed his mind. He is luxurious, oſtentatious, generous to the unfortunate, and ready to contribute to every ſcheme of public beneficence or utility. Still, this ardent paſſion for the acquiſition of money which occupies ſo much of the thoughts of every American, never fails to appear diſguſting to men of letters, or to men of rank who have at any time gone from Europe to America. They are aſtoniſhed to find phyſicians, lawyers, and prieſts, deeply engaged in ſtock-jobbing and commercial ſpeculations, and that every part of ſociety is compoſed of men whoſe ruling paſſion and great ſubject of meditation is, the ſudden acquiſition in ſome way or other of great pecuniary gain.

The Americans marry very young, eſpecially in the country. Young men, who generally eſtabliſh themſelves very early either in ſome new lands or in ſome trade, have occaſion for a wife to aſſiſt them in their labours; and this conduces to their early marriages as much as the general purity of manners. If a wife die, ſhe is, for the ſame reaſon, very ſpeedily replaced by another. Both in town and country, ſhe is an indiſpenſable reſource for domeſtic affairs, when her huſband is engaged in his own affairs, as every one is in America. She is alſo neceſſary as a companion in a country where the children ſoon quit their parents, and where the men, conſtantly engaged in ſome kind of buſineſs, find it inconvenient to leave their own families in ſearch of ſociety. The manners of the Americans in their conduct towards the other ſex are repreſented as very pure. Young women of uncommon beauty travel alone from 15 to 25 miles to Philadelphia to market with eggs, fowls, butter, and other commodities, beginning their journeys at the commencement of the night, without finding that their youth and beauty expoſe them to any hazard or inconvenience.

All travellers agree in repreſenting the American women as highly virtuous and reſpectable; as faithful and induſtrious wives, and affectionate mothers. The young women enjoy entire freedom, and the commerce of the ſexes is free from gallantry and from jealouſy. The crime of adultery, which attacks ſociety in its firſt elements, is ſaid to be unknown. One quality aſcribed in a remarkable degree to the American women ought not to paſs unnoticed, which is, a remarkable attention to cleanneſs, both in their perſons and their houſes. The French who took refuge in the United States during the revolution, though attentive enough in this reſpect to the appearance of their perſons, were regarded as ſo ſlovenly and dirty in the management of their houſes and furniture, that they ſoon rendered themſelves altogether odious to the Americans.

The ſtate of education and of literature is ſtill defective in moſt parts of America. The phyſical or natural America.
part of the education of the Americans is ſaid to be excellent. Left to themſelves from their tendereſt age, they are expoſed without precaution to the rigour of heat and cold, with their feet and legs bare, and with few clothes. The children of the rich are not brought up much more tenderly than thoſe in leſs eaſy circumſtances. In the country, they often go alone twice a-day to ſchools, two or three miles diſtant from home. There are few American children who cannot ſwim boldly, and at ten years of age, manage a gun and hunt without danger: and not one who does not ride with great courage, or who fears fatigue. This liberty given to children teaches them to take care of themſelves, and, bold as they are, they avoid dangers better than children brought up with much greater care. They become ſtrong and enterpriſing men, whom no difficulties diſhearten; and produce a growing generation, which will be as invincible in its territory, as that which preceded it was found to be.

The inſtructive part of education has not attained the ſame perfection. Maſſachuſets is the only ſtate in which a ſyſtem of education has hitherto been eſtabliſhed by law. It was enacted in 1789, that each town or townſhip containing 50 families or houſes ſhall have a ſchoolmaſter of good character, to inſtruct the children in the Engliſh language, reading, writing, and arithmetic. The ſchool to be open ſix months in the year. The towns or townſhips of 100 families, are to have ſchools of the ſame kind, which are to be open during the whole year. Thoſe of 150 families are bound to have two ſchools, one for 12 months and one for ſix. Thoſe of 200 families, or more, are bound to have two ſchools, one for 12 and one for ſix months, and in addition to theſe, a grammar ſchool, in which the Greek Latin, and Engliſh languages are to be taught grammatically. The expence of ſupporting the ſchoolmaſters, together with the ſchool houſes, the fuel, and ink that may be neceſſary, are defrayed by a general tax or aſſeſſment upon the whole people. The parents pay their ſhare of this aſſeſſment, in proportion only to their wealth, and not to the number of their children. They ſupply their children with the neceſſary books, and with pens and paper. Colleges are alſo eſtabliſhed; but in theſe the profeſſors receive fees from the ſtudents. The books read at the ſchools are regulated by law; and we are informed, that the Latin grammar which the ſtate of Maſſachuſets has preferred is that of Dr Alexander Adam, rector of the High School of Edinburgh, author alſo of the celebrated treatiſe upon Roman Antiquities, and other works illuſtrative of claſſical literature.

Though the ſtate of Maſſachuſets is the only one that has eſtabliſhed a ſyſtem of education by law, the manners of the people in the whole New England ſtates have produced ſuch a degree of attention to literature, that there are few or no white perſons there who cannot read the Engliſh language, and the people at large poſſeſs a conſiderable degree of literature. In proportion, however, to the diſtance from New England ſouthward, education becomes gradually defective, and in the Carolinas and Georgia, a ſchool is ſcarcely to be found. In different ſtates, however, there are colleges and univerſities, in which the ſciences are taught, and degrees conferred.

America. The education of youth in America is conducted as in Scotland, with a view rather to introduce young perſons quickly into life, than to render them men of profound learning. A young man in America hardly arrives at the age of 16 years before his parents are deſirous of planting him in the counting-houſe of a merchant, or in the office of a lawyer: Hence he is never likely to reſign himſelf to the ſciences and to letters. He ſoon loſes all other ideas than thoſe which can hurry him on to the acquiſition of a fortune. He ſees no other views in thoſe around him, or in ſociety; and that his whole conſideration is attached to this kind of ſucceſs. Hence it will not appear ſurpriſing, that there ſhould be few learned men in the United States. Indeed, the number of learned, ingenious, and well-informed individuals, which is very conſiderable, that have appeared there, muſt be aſcribed rather to their own native energy of character than to their education, or the ſtate of ſociety in which they were placed.

In the American ſchools, the inſtruction in Latin is ſeldom extended farther than the firſt claſſic authors, including Cornelius Nepos, Ovid, and ſome orations of Cicero. A little of Virgil and Horace are read in the colleges. The New Teſtament in Greek, aad a little of Homer in ſome colleges, is the limit of claſſical inſtruction in that language. Mathematical inſtruction is uſually confined to the Elements of Euclid, and the firſt principles of conic ſections. Practical geometry, however, for the purpoſes of land-ſurveying and navigation, is much valued, on account of its connexion with thoſe branches of buſineſs which lead to riches. Mechanics, hydroſtatics, and hydraulics, are taught after the works of Nicolſon, Ferguſon, or Enfield. Medicine, however, and the branches of ſcience connected with it, are ſaid to be well taught in ſome American univerſities; and that profeſſion has produced many reſpectable and well-informed men. Still it is probable, that however enlightened the Americans may account themſelves, the nature of their purſuits is ſuch, that a conſiderable time will elapſe before they can exhibit any great number of men of profound and extenſive learning. Such accompliſhments, however, as their ſituation requires they poſſeſs in much perfection. In the debates of congreſs, ſpeeches full of correct reaſoning, drawn from a knowledge of mankind and of hiſtory, and expreſſed with purity and eloquence, are often heard; and almoſt all perſons engaged in buſineſs aſpire in their correſpondence to diſplay much elegance of expreſſion, though their ſtyle is apt to ſwell out into America. verboſity.

The moſt common vices of the American people are, an oſtentatious luxury, on the part of the rich in great towns; and of the inferior claſs, a too free uſe of ſpirituous liquors. This they are led to by their eaſy circumſtances, and by a great fondneſs for ſociety. Theſe vices are greater and more remarkable in the ſouthern ſtates than in the northern. In the ſouth, alſo, men are more fond of gaming than in the north, and the energetic qualities of the American character are leſs conſpicuous; a circumſtance which is ſuppoſed to ariſe from the exiſtence of ſlavery, which in theſe ſtates renders labour and perſonal induſtry leſs reſpectable. But in general, the character of the Americans is rendered pure by the train of conſtant induſtry in which all perſons are engaged. One of the moſt troubleſome of their faults, however, ought not to paſs unnoticed: They are, upon the whole, a very litigious people, and lawyers abound and flouriſh among them to a great degree. But, in common with all the countries that have derived any part of their conſtitution or their laws from England, they poſſeſs a very pure adminiſtration of juſtice. This has always been the ſingular privilege and the glory of the Engliſh nation. No people that attains to it can fail to poſſeſs ſound morals, or conſequently to enjoy all the proſperity of which a nation is capable. To the habits of integrity, and a reſpect for the laws and the magiſtrates, which it produces, we muſt aſcribe the internal tranquillity of America. Politics form the only ſcience which all men ſtudy there; and political zeal hurries the different parties into the moſt uncharitable miſrepreſentations of each others views and conduct. But no man has preferred his own perſonal aggrandiſement to the authority of the law or the welfare of his country; no uſurpation has defaced the fair page of the American hiſtory; and if rebellion has occurred, it has been bloodleſs, and has only afforded to all ranks of men an opportunity of diſplaying their attachment to public order.

Upon the whole, though men excluſively attached to the purſuits of literature, and to the enjoyment of idle but poliſhed ſociety, would find themſelves ill ſituated in America, yet we muſt undoubtedly regard the United States as forming at this moment the moſt proſperous empire upon the globe. It contains an active people, eaſy in their circumſtances and happy; and every day gives an acceſſion of population and of ſtrength to this new country.

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ATLANTIC OCEAN
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GREENLAND
DAVIS STRAIT
LABRADOR
HUDSONS BAY
NEW ALBION
NEW MEXICO
QUINIBA
TEGUACO
ASSINIBOILS
Arctic Circle
Tropic of Cancer
Longitude West from London
Bering Strait
Cape Prince of Wales
Cape Rodney
Cape Derby
Cape Stephens
Icy Cape
Cape Lisburn
Point Barrow
Cape Halkett
Cape Bathurst
Cape Parry
Cape Krusenstern
Cape Lisburne
Cape Serdze
Cape Navarin
Cape Anadir
Gulf of Anadir
Behrings Sea
Behrings Straits
Behrings Island
Kotzebue Sea
Kotzebue Inlet
Cape Espenberg
Cape Krusenstern
Admiralty Bay
Cross Sound
Port Banks
Port Mulgrave
Port Bucarelli
Stephens Sound
Dixons Entrance
Q. Charlottes Isles
C. St. James
Gilberts Bay
Prince Williams Sound
Cape Hinchinbrook
Montague I.
Kayak I.
Cape Elias
Cape Suckling
Cape Yakutat
Cape Fairweather
Mount St. Elias
Mount St. Augustine
Mount St. Hilario
Mount Fairweather
Mount Crillon
Mount Edgecumbe
Sitka
Norfolk Sound
Bristol Bay
Ounemak
Oonalaska
Cooks River
Cooks Inlet
Shoal Water
Clerke Pt.
Cape Prince of Wales
Cape Rodney
Cape Derby
Cape Stephens
Icy Cape
Cape Lisburn
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Clerke Pt.

Longitude West from London
NORTH PACIFIC OCEAN
NORTH ATLANTIC OCEAN
SOUTH PACIFIC OCEAN
SOUTH ATLANTIC OCEAN
CARIBBEAN SEA
EQUATOR
Tropic of Capricorn
AMAZONIA
BRASIL
NEW GRENADA
NEW GUIANA
TERRA FIRMA
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Cape Gregory
Cape Orange
Cape St Roque
Cape St Augustin
Cape St Mary
Cape St Antonio
Cape St Thomas
Cape St Paul
Cape St Peter
Cape St Francis
Cape St Vincent
Cape St Nicolas
Cape St Felix
Cape St Ambrosio I.
Cape St Barbara
Cape St Barbara I.
Cape St Barbara Mts
Cape St Barbara Pass
Cape St Barbara Strait
Cape St Barbara Bay
Cape St Barbara Harbour
Cape St Barbara Island
Cape St Barbara Mountains
Cape St Barbara Valley
Cape St Barbara River
Cape St Barbara Lake
Cape St Barbara Plain
Cape St Barbara Desert
Cape St Barbara Forest
Cape St Barbara Coast
Cape St Barbara Shore
Cape St Barbara Point
Cape St Barbara Head
Cape St Barbara Cliff
Cape St Barbara Rock
Cape St Barbara Reef
Cape St Barbara Shoal
Cape St Barbara Bank
Cape St Barbara Channel
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Cape St Barbara Gulf
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Cape St Barbara Inlet
Cape St Barbara Creek
Cape St Barbara Brook
Cape St Barbara Spring
Cape St Barbara Well
Cape St Barbara Hill
Cape St Barbara Mountain
SOUTH AMERICA

American Amethyst.

AMERICAN NIGHT-SHADE. See PHYTOLACCA, BOTANY *Index*.

AMERICAN *Ground-nut*. See ARACHIS, BOTANY *Index*.

AMERICUS VESPUCIUS. See VESPUCCI.

AMERSFORT, a city in the Netherlands, in the province of Utrecht, ſeated on the river Ems. E. Long. 5. 20. N. Lat. 52. 14. The moſt remarkable objects are, the townhouſe; the grand palace, which is triangular; the public walk, planted with trees; and the great church, dedicated to St George. The land to the eaſt and ſouth of this city is very fruitful; on the north there is nothing but paſture ground, and on the weſt it is woody. Not far from hence is a mountain called *Amersfort berg*, on which is planted a villa of trees, which reaches to Utrecht.

AMERSHAM, or AGMONDESHAM, a market town in Buckinghamſhire, conſiſting of about 200 houſes, with a free-ſchool, and four alms-houſes. It ſends two members to parliament, and has a market on Tueſday. It is a rectory rated at 48l. 16s. 8d. in the king's books. The market-houſe is a very handſome ſtructure. W. Long. 0. 35. N. Lat. 51. 47.

AMES, WILLIAM, D. D. a learned independent divine, celebrated for his controverſial writings, was born in 1576, and educated at Chriſt's college, in Cambridge. In the reign of King James I. he left the univerſity, and ſoon after the kingdom, on account of his being unwilling to conform to the rules of the church; and retired to the Hague, where he had not been long before he was invited to accept of the divinity chair in the univerſity of Franeker, in Frieſland, which he filled with admirable abilities for above twelve years; during which his fame was ſo great, that many came from remote nations to be educated under him. He from thence removed to Rotterdam for a change of air, which his health required; and here he continued during the remainder of his life. His controverſial writings, which compoſe the greateſt part of his works, are chiefly againſt Bellarmine and the Arminians. He alſo wrote, 1. A freſh Suit againſt the Ceremonies. 2. *Lectiones in Pſalmos Davidis*. 3. *Medulla Theologiæ*; and ſeveral pieces relative to the ſciences. He died of an aſthma at Rotterdam, in November 1633.

AMESTRATUS, a town of Sicily (Cicero); *Ameſtratos* (Stephanus); *Amaſtra* (Silius Italicus); *Multiſtratos* (Polybius): Now *Muſtretta*, in the Val di Demona, on the river Halecus. It was a very ſtrong fort of the Carthaginians, beſieged in vain by the Romans for ſeven months with conſiderable loſs; at length, after another ſiege, taken and razed (Diodorus Siculus.)

AMETHYST, a tranſparent gem of a purple colour, which ſeems compoſed of a ſtrong blue and a deep red; and, according as either of theſe prevails, affording different tinges of purple, ſometimes approaching to violet, and ſometimes even fading to a pale roſe colour. Though the amethyſt is generally of a purple colour, it is nevertheleſs ſometimes found naturally colourleſs, and may at any time be eaſily made ſo by putting it into the fire; in which pellucid or colourleſs ſtate, it ſo reſembles the diamond, that its want of hardneſs ſeems the only way of diſtinguiſhing it. Some derive the name *amethyſt* from its colour, which reſembles wine mixed with water, whilſt others, with more probability, think it got its name from its ſuppoſed virtue of preventing drunkenneſs; an opinion which, however imaginary, prevailed to that degree among the ancients, that it was uſual for great drinkers to wear it about their necks. Be this as it will, the amethyſt is ſcarcely inferior to any of the gems in the beauty of its colour, and in its pureſt ſtate is of the ſame hardneſs, and at leaſt of equal value, with the ruby and ſapphire. It is found of various ſizes, from the bigneſs of a ſmall vetch to an inch and a half in diameter, and often to much more than that in length. Its ſhape is extremely various, ſometimes roundiſh, ſometimes oblong, and at others flatted, at leaſt on one ſide; but its moſt common appearance is in a cryſtalliform figure, conſiſting of a thick column, compoſed of four planes, and terminated by a flat and ſhort pyramid of the ſame number of ſides; or elſe, of a thinner and longer hexangular column; and ſometimes of a long pyramid, without any column. It makes the gayeſt figure in the laſt of theſe ſtates, but is hardeſt and moſt valuable in the roundiſh and pebble-like form. The amethyſt is found in the Eaſt and Weſt Indies, and in ſeveral parts of Europe; the oriental ones, at leaſt ſome of the finer ſpecimens, being ſo hard and bright as to equal any of the coloured gems in value. However, by far the greater number of amethyſts fall infinitely ſhort of theſe; as all the European ones, and not a few of thoſe brought from the Eaſt and Weſt Indies, are very little harder than common cryſtal.

Counterfeit or Factitious AMETHYST. Spars and cryſtals tinged red and yellow, &c. are ſold for amethyſts. The falſe ones come from Germany, are tinged by vapours in the mines, and contain lead.

Amethyſts may be counterfeited by glaſs, to which the proper colour or ſtain is given. There were fine ones made in France about the year 1690, which may even impoſe on connoiſſeurs, unleſs the ſtone be taken out of the collet.—The method of giving this colour to glaſs is directed as follows: Take cryſtal frit, made with the moſt perfect and fine tarſo: Then prepare a mixture of manganeſe in powder, one pound; and zaffre prepared, one ounce and a half: Mix theſe powders well together; and add to every pound of the frit an ounce of this powder. Let it be put into the pots with the frit, not into the prepared metal. When the whole has ſtood long enough in fuſion to be perfectly pure, work it into veſſels, and they will reſemble the colour of the amethyſt.

AMETHYST, in *Heraldry*, a term for the purple colour in the coat of a nobleman, in uſe with thoſe who blazon with precious ſtones, inſtead of metals and colours. This, in a gentleman's coat-of-arms, is called *Purpure*; and in thoſe of ſovereign princes, *Mercury*.

AMETHYSTEA, AMETHYST. See BOTANY *Index*.

AMETHYSTINE is applied, in antiquity, to a kind of purple garment dyed of the true amethyſt. In this ſenſe amethyſtine differed from Tyrian as well as from *hyacinthine* purple, being a kind of medium between.

AMHAR, or AMHARA, a province of Abyſſinia, ſaid to extend 40 leagues from eaſt to weſt. It is conſidered as the moſt noble in the whole empire, both on account of its being the uſual reſidence of the A-

Amhurſt || Amicable.

byſſinian monarchs, and having a particular dialect different from all the reſt, which, by reaſon of the emperors being brought up in the province, is become the language of the court and of the politer people. Here is the famed rock Amba-geſhen, where the young monarchs were formerly confined. See AMBA and ABYSSINIA.

AMHURST, NICHOLAS, an Engliſh poet and political writer of the 18th century, was born at Marden in Kent, and entered of St John's college, Oxford; from whence he was expelled for irregularity of conduct and libertine principles. Retaining great reſentment againſt the univerſity on this account, he abuſed its learning and diſcipline, and ſome of the moſt reſpectable characters in it, in a poem publiſhed in 1724 called *Oculus Britanniæ*, and in a book entitled *Terræ Filius*. He publiſhed, A Miſcellany of Poems, ſacred and profane; and, The Convocation, a poem in five cantos, which was a ſatire on the Biſhop of Bangor's antagoniſts. But he is beſt known for the ſhare he had in the political paper called *The Craftſman*: though, after having been the drudge of his party for near 20 years, he was ſo much forgotten in the famous compromiſe of 1742 as if he had never been born; and, when he died in that year of a broken heart, was indebted to the charity of his bookſellers for a grave.

AMIANTHUS, or EARTH-FLAX, in *Mineralogy*, a fibrous, flexile, elaſtic, mineral ſubſtance, conſiſting of ſhort, abrupt, and interwoven filaments. It is found in Germany, in the ſtrata of iron ore, ſometimes forming veins of an inch in diameter. Its fibres are ſo flexible that cloth has been made of them, and the ſhorter filaments that ſeparate in the waſhing of the ſtone may be made into paper in the common manner. For the method of its preparation for manufacture into cloth, ſee ASBESTOS.

Amianthus is claſſed by Mr Kirwan in the muriatic genus of earths, becauſe it contains about a fifth part of magneſia. Its other conſtituents are, flint, mild calcareous earth, barytes, clay, and a very ſmall proportion of iron. It is fuſible *per ſe* in a ſtrong heat, and alſo with the common fluxes. See MINERALOGY *Index*.

AMICABLE, in a general ſenſe, denotes any thing done in a friendly manner, or to promote peace.

AMICABLE Benches, in Roman antiquity, were, according to Pitiſcus, lower and leſs honourable ſeats allotted for the *judices pedanei*, or inferior judges, who, upon being admitted of the emperor's council, were dignified by him with the title *amici*.

AMICABLE Numbers, denote pairs of numbers, of which each of them is mutually equal to the ſum of all the aliquot parts of the other. So the firſt or leaſt pair of amicable numbers are 220 and 284; all the aliquot parts of which, with their ſums, are as follows, viz.

of 220, they are 1, 2, 4, 5, 10, 11, 20, 22, 44, 55, 110, their ſum - - - 284;
of 284, they are 1, 2, 4, 71, 142, and their ſum is 220.

The 2d pair of amicable numbers are 17296 and 18416, which have alſo the ſame property as above.

And the third pair of amicable numbers are 9363584 and 9437056.

Theſe three pairs of amicable numbers were found out by F. Schooten, ſect. 9. of his *Exercitationes Mathematicæ*, who, it is ſaid, firſt gave the name of *amicable* to ſuch numbers, though ſuch properties of numbers, it ſeems, had before been treated of by Rudolphus, Deſcartes, and others. Amicable || Amida.

To find the firſt pair, Schooten puts $4x$ and $4yz$, or a^2x and a^2yz for the two numbers where $a=2$; then making each of theſe equal to the ſum of the aliquot parts of the other, gives two equations, from which are found the values of x and z, and conſequently aſſuming a proper value for y, the two amicable numbers themſelves $4x$ and $4yz$.

In like manner for the other pairs of ſuch numbers; in which he finds it neceſſary to aſſume $16x$ and $16yz$ or a^4x and a^4yz for the 2d pair, and $128x$ and $128yz$ or a^7x and a^7yz for the 3d pair.

Schooten then gives this practical rule, from Deſcartes, for finding amicable numbers, viz. aſſume the number 2, or ſome power of the number 2, ſuch that if unity or 1 be ſubtracted from each of theſe three following quantities, viz.

from three times the aſſumed number,
alſo from 6 times the aſſumed number,
and from 18 times the ſquare of the aſſumed number,

the three remainders may be all prime numbers; then the laſt prime number being multiplied by double the aſſumed number, the product will be one of the amicable numbers ſought, and the ſum of its aliquot parts will be the other.

That is, if a be put $=$ the number 2, and n ſome integer number, ſuch that $3a^n-1$, and $6a^n-1$, and $18a^{2n}-1$, be all three prime numbers; then is $\overline{18a^{2n}-1} \times 2a^n$ one of the amicable numbers; and the ſum of its aliquot parts is the other.

AMICTUS, in Roman antiquity, was any upper garment worn over the tunica.

AMICTUS, among eccleſiaſtical writers, the uppermoſt garment anciently worn by the clergy; the other five being the alba, fingulum, ſtola, manipulus, and planeta. The amictus was a linen garment, of a ſquare figure, covering the head, neck, and ſhoulders, and buckled or claſped before the breaſt. It is ſtill worn by the religious abroad.

AMICULUM, in Roman antiquity, a woman's upper garment, which differed from the pala. It was worn both by matrons and courtezans.

AMICUS CURIÆ, a law term, to denote a by-ſtander who informs the court of a matter in law that is doubtful or miſtaken.

AMID-AMID, in *Geography*, a lofty ridge of mountains in Abyſſinia. See ABYSSINIA.

AMIDA, a god worſhipped by the Japaneſe, who has many temples erected to him in the iſland of Japan, of which the principal is at Jeddo. The Japaneſe have ſuch a confidence in their idol Amida, that they hope to attain eternal felicity by the frequent invocation of his name. One of the figures of this idol is repreſented at Rome.

AMIDA, in *Ancient Geography*, a principal city of Meſopotamia, otherwiſe called *Ammæa*; ſituated on a high mountain, on the borders of Aſſyria, on the Tigris, where it receives the Nymphius. It was taken from the Romans, in the time of the emperor Conſtans, by Sapores king of Perſia. The ſiege is ſaid to have coſt him 30,000 men; however, he reduced

Amiens. ced it to such ruin, that the emperor afterwards wept over it. According to Ammianus Marcellinus, the city was razed; the chief officers were crucified; and the rest, with the soldiers and inhabitants, either put to the sword or carried into captivity, except our historian himself, and two or three more, who, in the dead of the night, escaped through a postern unperceived by the enemy. The inhabitants of Nisibis, however, being obliged to leave their own city by Jovian's treaty with the Persians, soon restored Amida to its former strength; but it was again taken by Cavades in 501, but was restored to the Romans in 503. On the declension of the Roman power, it fell again into the hands of the Persians; but was taken from them by the Saracens in 899. It is now in the possession of the Turks. Here are above 20,000 Christians, who are better treated by the Turks than in other places. A great trade is carried on in this city of red Turkey leather, and cotton cloth of the same colour. The Arabian name of Amida is *Diarbekir*, and the Turkish one *Kara-Amed*. E. Long. 39. 0. N. Lat. 36. 58.

AMIENS, a large handsome city of France, the capital of Picardy. It is agreeably situated on the river Somme, and said to have received its Latin name *Ambianum* from being everywhere encompassed with water. It is a place of great antiquity; being mentioned by Cæsar as a town that had made a vigorous resistance against the Romans, and where he convened a general assembly of the Gauls after having made himself master of it. The emperors Antoninus and Marcus Aurelius enlarged it; and Constantine, Constans, Julian, and several others, resided here a considerable time. The town is encompassed with a wall and other fortifications; and the ramparts are planted with trees, which form a delightful walk. The river Somme enters Amiens by three different channels, under as many bridges; and these channels, after washing the town in several places, where they are of use in its different manufactures, unite at the other end by the bridge of St Michael. Here is a quay for the boats that come from Abbeville with goods brought by sea. At the gate of Noyon there is a suburb remarkable for the abbey of St Achen. Next to this gate you come to that of Paris, where they have a long mall between two rows of trees. The houses are well built; the streets spacious, embellished with handsome squares and good buildings; and the number of inhabitants is between 40,000 and 50,000. The cathedral, dedicated to our Lady, is one of the largest and most magnificent churches in France; adorned with handsome paintings, fine pillars, chapels, and tombs; particularly the nave is greatly admired. The other places worth seeing are the palace of the bailiwick, the townhouse, the square *des Fleurs*, and the great market place.

Amiens was taken by the Spaniards, in 1597, by the following stratagem: Soldiers, disguised like peasants, conducted a cart laden with nuts, and let a bag of them fall just as the gate was opened. While the guard was busy in gathering up the nuts, the Spaniards entered and became masters of the town. It was retaken by Henry IV. who built a citadel here. The definitive treaty of peace, entered into by the different European powers in 1802, was negotiated here.

This town is the seat of a bishop, suffragan of Rheims, as also of a presidial, bailiwick, vidam, a chamber of accounts, and a generality. The bishop's revenue is 30,000 Livres. They have some linen and woollen manufactures, and they also make a great quantity of black and green soap. It lies in L. Long. 2. 19. N. Lat. 49. 53.

Amilcar

AMILCAR, the name of several Carthaginian captains. The most celebrated of them is Amilcar Barcas, the father of Hannibal, who, during five years, infested the coast of Italy: when the Romans had fitted out their whole naval strength, defeated him near Trapani, 242 years before Christ; and thus put an end to the first Punic war. Amilcar began the second, and landed in Spain, where he subdued the most warlike nations; but as he was preparing to invade Italy against Italy, he was killed in battle, 218 years before the Christian era. He left three sons, whom he had educated, as he said, like three lions, to tear Rome in pieces; and made Hannibal, his eldest son, swear an eternal enmity against the Romans.

AMILICTI, in the Chaldaic theology, denote a kind of intellectual powers, or persons in the divine hierarchy. The amilicti are represented as seven in number; and constitute one of the triads, in the third order of the hierarchy.

AMIRANTE, in the Spanish polity, a great officer of state, answering to our lord high admiral.

AMISUS, in *Ancient Geography*, the chief city of the ancient kingdom of Pontus. It was built by the Milesians, and peopled partly by them and partly by a colony from Athens. It was at first a free city, like the other Greek cities in Asia; but afterwards subdued by Pharnaces king of Pontus, who made it his metropolis. It was taken by Lucullus in the Mithridatic war, who restored it to its ancient liberty. Close by Amisus stood another city called *Eupatoria*, from Mithridates Eupator its founder. This city was likewise taken by Lucullus, who levelled it with the ground; but it was afterwards rebuilt by Pompey, who united it with Amisus, giving them the name of *Pompeiopolis*. It was taken during the war between Cæsar and Pompey, by Pharnaces king of Pontus, who put most of its inhabitants to the sword; but Cæsar, having conquered Pharnaces, made it again a free city.

AMITERNUM, a town of the Sabines, in Italy, (Livy, Pliny); now extinct. The ruins are to be seen on the level ridge of a mountain, near St Vittorino, and the springs of the Aternus; not far from Aquila, which rose out of the ruins of Amiternum.

AMITTERE LEGEM TERRÆ, among lawyers, a phrase importing the loss of liberty of swearing in any court: The punishment of a champion overcome or yielding in battle, of jurors found guilty in a writ of attaint, and of a person outlawed.

AM-KAS, in *History*, a name given to a spacious saloon in the palace of the Great Mogul, where he gives audience to his subjects, and where he appears on solemn festivals with extraordinary magnificence. His throne is supported by six large steps of massy gold, set with rubies, emeralds, and diamonds, estimated at 60,000,000l.

AMMA, among ecclesiastical writers, a term used to denote an abbess or spiritual mother.

AMMAN, or AMMANT, in the German and Belgic polity, a judge who has the cognizance of civil causes.

—It is alſo uſed among the French for a public notary, or officer, who draws up inſtruments and deeds.

AMMANIA. See Botany *Index*.

AMMI, BISHOP'S WEED. See Botany *Index*.

AMMIANUS MARCELLINUS, a Roman hiſtorian of the fourth century, was a native of Greece, born in the city of Antioch. Having ſerved ſeveral years in the early part of his life in the army, he was afterwards promoted to the honourable ſtation of *protector domeſticus*. In the year 350 he entered the ſervice of Conſtantius, the emperor of the eaſt, and, under the command of Urſicinus, a general of the horſe, he ſerved during ſeveral expeditions. According to his own modeſt relation, it appears that he acquired conſiderable military fame, and that he deſerved well of his ſovereign. He attended the emperor Julian in his expedition into Perſia, but hiſtory is ſilent whether or not he roſe to any higher military rank than that which has already been mentioned. He was either in the city or the vicinity of Antioch when the conſpiracy of Theodorus was diſcovered, under the reign of Valens, and was an eye witneſs of the ſevere torments to which many perſons were expoſed by the emperor on that account.

But his laſting reputation was not to be acquired from military exertions. He left the army, and retired to Rome, where he employed his time and talents in writing the hiſtory of that empire during the period of three centuries. Though a native of Greece, he wrote in the Latin language; but, according to the remark of Voſſius, his Latin ſhows that he was a Greek, and alſo a ſoldier. His hiſtory begins with the reign of Nerva, and continues to the death of Valens; and the work was originally divided into 31 books. Of theſe the firſt 13 have periſhed, and the 18 which remain commence with the 17th year of the reign of Conſtantius, and terminate at the year 375. But there are ſeveral facts mentioned in the hiſtory which prove that the author was alive in the year 390. Of this number are the acceſſion of Theodoſius to the eaſtern empire, the character of Gratian, and the conſulate of Neothorius. Similar to the manner in which Herodotus, the father of Grecian hiſtory, read his hiſtory, Marcellinus read his books in public with general approbation. Some have reckoned the ſtyle harſh and redundant, but this may eaſily be excuſed, from his education and military life; and the valuable information communicated abundantly compenſates for that defect. Candour and impartiality are leading features in his hiſtory. The character given him by Mr Gibbon appears to be accurate, when he ſays that he is "an accurate and faithful guide, who compoſed the hiſtory of his own times without indulging the prejudices and paſſions which uſually affect the mind of a contemporary."

A difference of opinion has obtained, whether or not our hiſtorian was a Chriſtian or a Pagan. But the reſpectful manner in which he ſpeaks of Pagan deities, and of the advantage of heathen auguries to foretel future events, render it abundantly evident that he was a heathen. The favourable account which he gives of the religion, manners, and fortitude of Chriſtians, are the reſult of his candour and impartiality as an hiſtorian. The work of Marcellinus has paſſed through ſeveral editions; but that printed at Leyden in 1693, with explanatory notes, is eſteemed the beſt. (*Gen. Biog.*)

AMMIRATO, SCIPIO, an eminent Italian hiſtorian, born at Lecca in Naples in 1531. After travelling over great part of Italy, without ſettling to his ſatisfaction, he was engaged by the great duke of Tuſcany to write *The Hiſtory of Florence*; for which he was preſented to a canonry in the cathedral there. He wrote other works while in this ſtation; and died in 1600.

AMMOCHRYSOS, from *αμμος ſand*, and *χρυσος gold*, a name given by authors to a ſtone very common in Germany, and ſeeming to be compoſed of a golden ſand. It is of a yellow gold-like colour, and its particles are very gloſſy, being all fragments of a coloured talc. It is uſually ſo ſoft as to be eaſily rubbed to a powder in the hand; ſometimes it requires grinding to powder in a mortar, or otherwiſe. It is uſed only as ſand to ſtrew over writing. The Germans call it *katzengold*. There is another kind of it leſs common, but much more beautiful, conſiſting of the ſame ſort of gloſſy ſpangles; not however of a gold colour, but of a bright red like vermilion.

AMMODYTES, or SAND-EEL. See Ichthyology *Index*.

AMMON, anciently a city of Marmàrica (Ptolemy). Arian calls it a *place*, not a city, in which ſtood the temple of Jupiter Ammon, round which there was nothing but ſandy waſtes. Pliny ſays, that the oracle of Ammon was 12 days journey from Memphis, and among the *Nomi* of Egypt he reckons the *Nomos Ammoniacus*: Diodorus Siculus, That the diſtrict where the temple ſtood, though ſurrounded with deſerts, was watered by dews which fell nowhere elſe in all that country. It was agreeably adorned with fruitful trees and ſprings, and full of villages. In the middle ſtood the Acropolis or citadel, encompaſſed with a triple wall; the firſt and inmoſt of which contained the palace; the others the apartments of the women, the relations and children, as alſo the temple of the god, and the ſacred fountains for luſtrations. Without the Acropolis ſtood, at no great diſtance, another temple of Ammon, ſhaded by a number of tall trees: near which there was a fountain, called that of the ſun, or *Solis Fons*, becauſe ſubject to extraordinary changes according to the time of the day; morning and evening warm, at noon cold, at midnight extremely hot. A kind of foſſil ſalt was ſaid to be naturally produced here. It was dug out of the earth in large oblong pieces, tranſparent as cryſtal. It was thought to be a preſent worthy of kings, and uſed by the Egyptians in their ſacrifices.—From this our ſal ammoniac has taken its name. See Siwah.

AMMON, or HAMMON, in heathen mythology, the name of the Egyptian Jupiter, worſhipped under the figure of a ram.

Bacchus having ſubdued Aſia, and paſſing with his army through the deſerts of Africa, was in great want of water: but Jupiter, his father, aſſuming the ſhape of a ram, led him to a fountain, where he refreſhed himſelf and his army; in gratitude for which favour, Bacchus built there a temple to Jupiter, under the title of *Ammon*, from the Greek *αμμος*, which ſignifies *ſand*, alluding to the ſandy deſert where it was built. In this

Ammanati. Ammoniac || Ammon.

Ammon || Ammoniac.

this temple was an oracle of great note, which Alexander the Great conſulted, and which laſted till the time of Theodoſius.

Hammon the god of the Egyptians, was the ſame with the Jupiter of the Greeks; for which reaſon theſe latter denominate the city which the Egyptians call No-Hammon, or the habitation of Ammon, *Diospolis* or the city of Jupiter. He is thought to be the ſame with Ham, who peopled Africa, and was the father of Mizraim, the founder of the Egyptians.

Ammon, or Ben-Ammi, the ſon of Lot, was the father of the Ammonites, and dwelt to the eaſt of the Dead ſea, in the mountains of Gilead. See Ammonitis and Ammonites.

Ammon, or Ammonius, *Andreas*, an excellent Latin poet, born at Lucca in Italy, was ſent by Pope Leo X. to England, in the characters of prothonotary of the apoſtolic ſee, and collector-general of that kingdom. He was a man of ſingular genius and learning, and ſoon became acquainted with the principal literati of thoſe times; particularly with Eraſmus, Colet, Grocin, and others, for the ſake of whoſe company he reſided ſome time at Oxford. The advice which Eraſmus gives him, in regard to puſhing his fortune, has a good deal of humour in it, and was certainly intended as a ſatire on the artful methods generally practiſed by the ſelfiſh and ambitious part of mankind: "In the firſt place (ſays he), throw off all ſenſe of ſhame; thruſt yourſelf into every one's buſineſs, and elbow out whomſoever you can; neither love nor hate any one; meaſure every thing by your own advantage; let this be the ſcope and drift of all your actions. Give nothing but what is to be returned with uſury, and be complaiſant to every body. Have always two ſtrings to your bow. Feign that you are ſolicited by many from abroad, and get every thing ready for your departure. Show letters inviting you elſewhere, with great promiſes." Ammon was Latin ſecretary to Henry VIII. but at what time he was appointed does not appear. In 1512 he was made canon and prebendary of the collegiate chapel of St Stephen, in the palace of Weſtminſter. He was likewiſe prebendary of Wells; and in 1514 was preſented to the rectory of Dychial in that dioceſe. About the ſame time, by the king's ſpecial recommendation, he was alſo made prebendary of Saliſbury. He died in the year 1517, and was buried in St Stephen's chapel in the palace of Weſtminſter. He was eſteemed an elegant Latin writer, and an admirable poet. The epiſtles of Eraſmus to Ammon abound with encomiums on his genius and learning. His works are, 1. *Epiſtolæ ad Eraſmum*, lib. i. 2. *Sanctæ conſtantiæ hiſtoria*, lib. i. 3. *Bucolica vel eclogæ*, lib. i. Baſil 1546, 8vo. 4. *De rebus nihil*, lib. i. 5. *Paucorum quidam*, lib. i. 6. *Varii generis epigrammata*, lib. i. 7. *Poemata diverſa*, lib. i.

AMMONIA, or Volatile Alkali. See Chemistry *Index*.

AMMONIAC, a concrete gummy reſinous juice, brought from the Eaſt Indies, uſually in large maſſes, compoſed of little lumps or tears, of a milky colour, but ſoon changing, upon being expoſed to the air, to a yellowiſh hue. We have no certain account of the plant which affords this juice: the ſeeds uſually found among the tears reſemble thoſe of the umbelliferous claſs. It has been, however, alleged, and not without ſome degree of probability, that it is an exudation from a ſpecies of the ferula, another ſpecies of which produces the aſſafœtida. The plant producing it is ſaid to grow in Nubia, Abyſſinia, and the interior parts of Egypt. It is brought to the eaſtern parts of Europe from Egypt, and to England from the Eaſt Indies, by ſome of the ſhips belonging to the Eaſt India Company trading to thoſe parts. Such tears as are large, dry, free from little ſtones, ſeeds, or other impurities, ſhould be picked out, and preferred for internal uſe: the coarſer kind is purified by ſolution and colature, and then carefully inſpiſſating it; unleſs this be artfully managed, the gum will loſe a conſiderable part of its more volatile parts. There is often ſold in the ſhops, under the name of ſtrained gum ammoniacum, a compoſition of ingredients much inferior in virtue.

Ammoniac has a naſeous ſweetiſh taſte, followed by a bitter one; and a peculiar ſmell, ſomewhat like that of galbanum, but more grateful: it ſoftens in the mouth, and grows of a whiter colour upon being chewed. Thrown upon live coals, it burns away in flame: it is in ſome meaſure ſoluble in water and in vinegar, with which it aſſumes the appearance of milk: but the reſinous part, amounting to about one half, ſubſides on ſtanding.

Ammoniac is a uſeful deobſtruent, and frequently preſcribed for opening obſtructions of the abdominal viſcera, and in hyſterical diſorders occaſioned by a deficiency of the menſtrual evacuations. It is likewiſe ſuppoſed to deterge the pulmonary veſſels; and proves of conſiderable ſervice in ſome kinds of aſthmas, where the lungs are oppreſſed by viſcid phlegm; in this intention, a ſolution of gum ammoniac in vinegar of ſquills proves a medicine of great efficacy, though not a little unpleaſant. In long and obſtinate colics proceeding from viſcid matter lodged in the inteſtines, this gummy reſin has produced happy effects, after the purges and the common carminatives had been uſed in vain. Ammoniac is moſt commodiouſly taken in the form of pills; about a ſcruple may be given every night, or oftener. Externally, it ſoftens and ripens hard tumours: a ſolution of it in vinegar ſtands recommended by ſome for reſolving even ſcirrhous ſwellings. A plaſter made of it and ſquill vinegar is recommended by ſome in white ſwellings. A dilute mixture of the ſame is likewiſe rubbed on the parts, which are alſo fumigated with the ſmoke of juniper berries. In the ſhops is prepared a ſolution of it in pennyroyal water, called from its milky colour *lac ammoniaci*. It is an ingredient alſo in the ſquill pills.

Sal Ammoniac, the old name of *muriate of ammonia*, a native ſalt, compoſed of ammonia, or volatile alkali, and muriatic acid, which was generated in thoſe large inns or caravanſeras where the crowd of pilgrims coming from the temple of Jupiter Ammon uſed to lodge; who, in thoſe parts, travelling upon camels, and thoſe creatures when in Cyrene, a province of Egypt, where that celebrated temple ſtood, urining in the ſtables, or (ſay ſome) in the parched ſands, out of this urine, which is remarkably ſtrong, aroſe a kind of ſalt, denominated ſometimes (from the temple) *Ammoniac*, and ſometimes (from the country) *Cyrenaic*. Since the ceſſation of theſe pilgrimages, no more of this ſalt has been made there; and, from this deficiency

Ammonian Amphibolites.

ficiency, ſome ſuſpect there never was any ſuch thing: But this ſuſpicion is removed, by the large quantities of a ſalt, nearly of the ſame nature, thrown out by Mount Ætna.

The modern ſal ammoniac is entirely factitious. See CHEMISTRY *Index*.

AMMONIAN PHILOSOPHY. See AMMONIUS.

AMMONITÆ, in *Natural Hiſtory*. See *Cornu Ammonis*.

AMMONITES, a people deſcended from Ammon the ſon of Lot. The Ammonites deſtroyed thoſe giants which they called Zamzummims (Deut. ii. 19—21.), and ſeized upon their country. God forbade Moſes, and by him the children of Iſrael (*id.* 19.), to attack the Ammonites; becauſe he did not intend to give their lands unto the Hebrews. Before the Iſraelites entered the land of Canaan, the Amorites had by conqueſt got great part of the countries belonging to the Ammonites and Moabites. This Moſes retook from the Amorites, and divided between the tribes of Gad and Reuben. In the time of Jephtha, the Ammonites declared war againſt the Iſraelites (Judg. xi.), under pretence that they detained a great part of the country which had formerly been theirs before the Amorites poſſeſſed it. Jephtha declared, that as this was an acquiſition which the Iſraelites had made in a juſt war, and what they had taken from the Amorites, who had long enjoyed it by right of conqueſt, he was under no obligation to reſtore it. The Ammonites were not ſatisfied with this reaſon; wherefore Jephtha gave them battle and defeated them. The Ammonites and Moabites generally united whenever there was any deſign ſet afoot of attacking the Iſraelites. After the death of Othniel (*id.* iii.), the Ammonites and Amalekites joined with Eglon king of Moab to oppreſs the Hebrews; whom they ſubdued, and governed for the ſpace of 18 years, till they were delivered by Ehud the ſon of Gera, who ſlew Eglon king of Moab. Some time after this, the Ammonites made war againſt the Iſraelites, and greatly diſtreſſed them. But theſe were at laſt delivered by the hands of Jephtha; who having attacked the Ammonites, made a very great ſlaughter among them (chap. xi.) In the beginning of Saul's reign (1 Sam. xi.), Nahaſh king of the Ammonites having ſat down before Jabeſh-gilead, reduced the inhabitants to the extremity of demanding a capitulation. Nahaſh anſwered, that he would capitulate with them upon no other conditions than their ſubmitting to have every one his right eye plucked out, that ſo they might be made a reproach to Iſrael: but Saul coming ſeaſonably to the relief of Jabeſh, delivered the city and people from the barbarity of the king of the Ammonites. David had been the king of Ammon's friend; and after the death of this prince, he ſent ambaſſadors to make his compliments of condolence to Hanun his ſon and ſucceſſor; who, imagining that David's ambaſſadors were come as ſpies to obſerve his ſtrength, and the condition of his kingdom, treated them in a very injurious manner (2 Sam. x. 4.) David revenged this indignity thrown upon his ambaſſadors, by defeating the Ammonites, the Moabites, and the Syrians their allies. Ammon and Moab continued under the obedience of the kings David and Solomon; and, after the ſeparation of the ten tribes, were ſubject to the kings of Iſrael till the death of Ahab in the year of the world 3107. Two years after the death of Ahab, Jehoram his ſon, and ſucceſſor of Ahaziah, defeated the Moabites (2 Kings iii.): but it does not appear that this victory was ſo complete as to reduce them to his obedience. At the ſame time, the Ammonites, Moabites, and other people, made an irruption into the lands belonging to Judah; but were forced back and routed by Jehoſhaphat (2 Ch. xx. 1, 2.) After the tribes of Reuben, Gad, and the half tribe of Manaſſeh, were carried into captivity by Tiglath-pilneſer in the year 3264, the Ammonites and Moabites took poſſeſſion of the cities belonging to theſe tribes. Jeremiah (xlix. 1.) reproaches them for it. The ambaſſadors of the Ammonites were ſome of thoſe to whom this prophet (chap. xxvii. 2—4.) preſented the cup of the Lord's fury, and directed to make bonds and yokes for themſelves; exhorting them to ſubmit themſelves to Nebuchadnezzar, and threatening them, if they did not, with captivity and ſlavery. Ezekiel (xxv. 4—10.) denounces their entire deſtruction; and tells them that God would give them up to the people of the eaſt, who ſhould ſet their palaces in their country, ſo that there ſhould be no more mention of the Ammonites among the nations. It is believed that theſe misfortunes happened to the Ammonites in the fifth year after the taking of Jeruſalem, when Nebuchadnezzar made war againſt all the people that dwelt upon the confines of Judea, in the year of the world 3420.

Ammonites Ammonius.

It is alſo thought probable, that Cyrus gave the Ammonites and Moabites the liberty of returning into their own country, from whence they had been removed by Nebuchadnezzar: for we ſee them in the place of their former ſettlement, expoſed to thoſe revolutions which were common to the people of Syria and Paleſtine; ſubject ſometimes to the kings of Egypt, and at other times to the kings of Syria. We are told by Polybius, that Antiochus the Great took Rabboth, or Philadelphia, their capital, demoliſhed the walls, and put a garriſon in it in 3806. During the perſecutions of Antiochus Epiphanes, Joſephus informs, that the Ammonites ſhowed their hatred to the Jews, and exerciſed great cruelties againſt ſuch of them as lived about their country. Juſtin Martyr ſays, That in his time there were ſtill many Ammonites remaining; but Origen aſſures us, that when he was living they were known only under the general name of Arabians. Thus was the prediction of Ezekiel (xxv. 10.) accompliſhed; who ſaid that the Ammonites ſhould be deſtroyed in ſuch a manner as not to be remembered among the nations.

AMMONITIS, in *Ancient Geography*, a country of Arabia Petræa, occupied by the children of Ammon, whence the appellation. Its limits partly to the weſt and partly to the north were the river Jabbok, whoſe courſe is nowhere determined; though Joſephus ſays, that it runs between Rabboth-Ammon or Philadelphia, and Geraſa, and falls into the Jordan.

AMMONIUS, ſurnamed SACCAS, was born in Alexandria, and flouriſhed about the beginning of the third century. He was one of the moſt celebrated philoſophers of his age; and, adopting with alterations the Eclectic philoſophy, laid the foundations of that ſect which was diſtinguiſhed by the name of the *New Platonics*. See ECCLECTICS and PLATONISM.

This

Ammonius. This learned man was born of Chriſtian parents, and educated in their religion; the outward profeſſion of which, it is ſaid, he never entirely deſerted. As his genius was vaſt and comprehenſive, ſo were his projects bold and ſingular: For he attempted a general coalition of all ſects, whether philoſophical or religious, by framing a ſyſtem of doctrines which he imagined calculated to unite them all, the Chriſtians not excepted, in the moſt perfect harmony. In purſuance of this deſign, he maintained, that the great principles of all philoſophical and religious truth were to be found equally in all ſects; that they differed from each other only in their method of expreſſing them, and in ſome opinions of little or no importance; and that, by a proper interpretation of their reſpective ſentiments, they might eaſily be united into one body. Accordingly, all the Gentile religions, and even the Chriſtian, were to be illuſtrated and explained by the principles of this univerſal philoſophy; and the fables of the prieſts were to be removed from Paganiſm, and the comments and interpretations of the diſciples of Jeſus from Chriſtianity. In conformity to this plan, he inſiſted, that all the religious ſyſtems of all nations ſhould be reſtored to their original purity, and reduced to their primitive ſtandard, viz. the ancient philoſophy of the eaſt, preſerved uncorrupted by Plato: and he affirmed, that this project was agreeable to the intentions of Jeſus Chriſt; whoſe ſole view in deſcending upon earth was to ſet bounds to the reigning ſuperſtition, to remove the errors that had blended themſelves with the religions of all nations, but not to aboliſh the ancient theology from which they were derived. He therefore adopted the doctrines which were received in Egypt concerning the univerſe and the Deity, conſidered as conſtituting one great whole; concerning the eternity of the world, the nature of ſouls, the empire of Providence, and the government of the world by demons. He alſo eſtabliſhed a ſyſtem of moral diſcipline; which allowed the people in general to live according to the laws of their country and the dictates of nature; but required the wiſe to exalt their minds by contemplation, and to mortify the body, ſo that they might be capable of enjoying the preſence and aſſiſtance of the demons, and of aſcending after death to the preſence of the Supreme Parent. In order to reconcile the popular religions, and particularly the Chriſtian, with this new ſyſtem, he made the whole hiſtory of the Heathen gods an allegory; maintaining that they were only celeſtial miniſters, entitled to an inferior kind of worſhip. And he acknowledged that Jeſus Chriſt was an excellent man, and the friend of God; but alleged that it was not his deſign entirely to aboliſh the worſhip of demons, and that his only intention was to purify the ancient religion. This ſyſtem, ſo plauſible in its firſt riſe, but ſo comprehenſive and complying in its progreſs, has been the ſource of innumerable errors and corruptions in the Chriſtian church. At its firſt eſtabliſhment it is ſaid to have had the approbation of Athenagoras Pantænus, and Clemens the Alexandrian, and of all who had the care of the public ſchool belonging to the Chriſtians at Alexandria. It was afterwards adopted by Longinus the celebrated author of the treatiſe on the Sublime, Plotinus, Herennius, Origen, Porphyry, Jamblichus the diſciple of Porphyry, Sopater, Ediſius, Euſtathius, Maximus of Epheſus, Priſcus, Chryſanthius the maſter of Julian, Julian the Apoſtate, Hierocles, Proclus, and many others both Pagans and Chriſtians.

The above opinions of Ammonius are collected from the writings and diſputations of his diſciples the modern Platonics: for he himſelf left nothing in writing behind him; nay, he impoſed a law upon his diſciples not to divulge his doctrines among the multitude; which injunction, however, they made no ſcruple to neglect and violate.

Ammunition || Amontons.

AMMUNITION, a general name for all warlike proviſions; but more particularly powder, ball, &c.

Ammunition, arms, utenſils of war, gunpowder, imported without licenſe from his majeſty, are, by the laws of England, forfeited, and triple the value. And again, ſuch licenſe obtained, except for furniſhing his majeſty's public ſtores, is to be void, and the offender to incur a premunire, and to be diſabled to hold any office from the crown.

Ammunition Bread, *Shoes*, &c. ſuch as are ſerved out to the ſoldiers of an army or garriſon.

AMNESTY, in matters of policy, denotes a pardon granted by a prince to his rebellious ſubjects, uſually with ſome exceptions; ſuch was that granted by Charles II. at his reſtoration.—The word is formed from the Greek αμνηστια, the name of an edict of this kind publiſhed by Thraſybulus, on his expulſion of the tyrants out of Athens.

AMNIOS, in *Anatomy*, a thin pellucid membrane which ſurrounds the fœtus in the womb. See Fœtus.

AMOEBÆUM, in ancient poetry, a kind of poem repreſenting a diſpute between two perſons, who are made to anſwer each other alternately; ſuch are the third and ſeventh of Virgil's eclogues.

AMOL, a town of Aſia, in the country of the Uſbecks, ſeated on the river Gihon. E. Long. 64. 30. N. Lat. 39. 20.

AMOMUM, Ginger. See Botany *Index*.

Amomum Vulgare. See Sium, Botany *Index*.

AMONTONS, William, an ingenious experimental philoſopher, the ſon of a lawyer of Normandy, was born at Paris in the year 1663. From his childhood he laboured under the infirmity of extreme deafneſs, which led him to amuſe himſelf in the want of ſociety, by ſtudying geometry and mechanics. He learned deſigning and ſurveying, and was employed in many public works. He preſented to the Academy of Sciences, in the year 1687, an hygrometer upon a new conſtruction, which was highly approved. In 1695, he publiſhed, in French, a treatiſe, entitled "Obſervations on a new Hour-Glaſs, and Barometers, Thermometers, and Hygrometers." This work was dedicated to the Academy of Sciences, of which he became a member in the year 1699. Upon his admiſſion, he read a paper on friction, in which a new theory upon that ſubject is propoſed: the paper will be found in the memoirs of the academy. He diſcovered a method of conveying intelligence ſpeedily to a great diſtance by means of ſignals, from one perſon to another, placed at as great a diſtance as they could be ſeen by means of teleſcopes: he may therefore be eſteemed the inventor of the telegraph. This ingenious man, who was diſtinguiſhed for his ingenuity in inventing, and his accuracy in executing experiments, died in the year 1705. His pieces which are numerous,

Amoræans || Amortization.

and on various ſubjects, as air, fire, barometers, pumps, &c. may be found in the volumes of the Memoirs of the Academy of Sciences. (*Gen. Biog.*)

AMORÆANS, a ſect or order of Gemaric doctors, or commentators on the Jeruſalem Talmud. The Amoræans ſucceeded the Miſchnic doctors. They ſubſiſted 250 years; and were ſucceeded by the Seburæans.

AMORGOS, or AMURGUS, in *Ancient Geography*, now *Morgo*, not far from Naxus to the eaſt, one of the European Sporades; the country of Simonides the iambic poet. To this iſland criminals were baniſhed. It was famous for a fine flax called *Emorgis*.

AMORITES, a people deſcended from Amorrhæus, according to the Septuagint and Vulgate; Emoræus, according to other expoſitors; Hæmori, according to the Hebrew; or Emorites, according to our verſion of the Bible; who was the fourth ſon of Canaan. Gen. x. 16.

The Amorites firſt of all peopled the mountains lying to the weſt of the Dead ſea. They had likewiſe eſtabliſhments to the eaſt of the ſame ſea, between the brooks of Jabbok and Arnon, from whence they forced the Ammonites and Moabites, Numb. xiii. 30. xvi. 29. Joſh. v. 1. and Judges xi. 19. 20. Moſes made a conqueſt of this country from their kings Sihon and Og, in the year of the world 2553.

The prophet Amos (ii. 9.), ſpeaking of the gigantic ſtature and valour of the Amorites, compares their height with that of cedars, and their ſtrength with that of an oak. The name *Amorite* is often taken in Scripture for all Canaanites in general. The lands which the Amorites poſſeſſed on this ſide Jordan were given to the tribe of Judah, and thoſe which they had enjoyed beyond this river were diſtributed between the tribes of Reuben and Gad.

AMORIUM, a town of Phrygia Major, near the river Sangarius, on the borders of Galatia.—It was taken from the Romans by the Saracens in 668; but ſoon after retaken by the Romans. A war breaking out again between theſe two nations in 837, the Roman emperor Theophilus deſtroyed Sozopetra the birthplace of the caliph Al' Motaſem, notwithſtanding his earneſt entreaties to him to ſpare it. This ſo enraged the caliph, that he ordered every one to engrave upon his ſhield the word *Amorium*, the birthplace of Theophilus, which he reſolved at all events to deſtroy. Accordingly he laid ſiege to the place, but met with a vigorous reſiſtance. At length, after a ſiege of 55 days, it was betrayed by one of the inhabitants who had abjured the Chriſtian religion. The caliph, exaſperated at the loſs he had ſuſtained during the ſiege, put moſt of the men to the ſword, carried the women and children into captivity, and levelled the city with the ground. His forces being diſtreſſed for want of water on their return home, the Chriſtian priſoners roſe upon ſome of them and murdered them; upon which the caliph put 6000 of the priſoners to death. According to the eaſtern hiſtorians, 30,000 of the inhabitants of Amorium were ſlain, and as many carried into captivity.

AMORPHA, FALSE INDIGO. See BOTANY *Index*.

AMORTIZATION, in *Law*, the alienation of lands or tenements to a corporation or fraternity and their ſucceſſors. See MORTMAIN.

Amos.

AMOS, the fourth of the ſmaller prophets, who in his youth had been a herdſman in Tekoa, a ſmall town about four leagues ſouthward of Jeruſalem, was ſent to the king of Baſhan, that is, to the people of Samaria, or the kingdom of Iſrael, to bring them back to repentance and an amendment of their lives; whence it is thought probable that he was born within the territories of Iſrael, and only retired to Tekoa on his being driven from Bethel, by Amaziah the prieſt of the golden calves at Bethel.

The prophet being thus retired to Tekoa, in the kingdom of Judah, continued to propheſy. He complains in many places of the violence offered him, by endeavouring to oblige him to ſilence. He boldly remonſtrates againſt the crying ſins that prevailed among the Iſraelites, as idolatry, oppreſſion, wantonneſs, and obſtinacy. He likewiſe reproves thoſe of Judah, ſuch as their carnal ſecurity, ſenſuality, and injuſtice. He terrifies them both with frequent threatenings, and pronounces that their ſins will at laſt end in the ruin of Judah and Iſrael, which he illuſtrates by the viſions of a plumb-line and a baſket of ſummer-fruit. It is obſervable in this prophecy, that as it begins with denunciation of judgment and deſtruction againſt the Syrians, Philiſtines, Tyrians, and other enemies of the Jews, ſo it concludes with comfortable promiſes of reſtoring the tabernacle of David, and erecting the kingdom of Chriſt. Amos was choſen to the prophetic office in the time of Uzziah king of Judah, and Jeroboam the ſon of Joaſh king of Iſrael, two years before the earthquake (Amos i. 1.), which happened in the 24th or 25th year of Uzziah, according to the rabbins and moſt of the modern commentators; or the year of the world 3219, when this prince uſurped the prieſt's office, and attempted to offer incenſe to the Lord: but it is obſerved, that this cannot be the caſe, becauſe Jotham the ſon of Uzziah, who was born in 3221, was of age to govern, and conſequently was between 15 and 20 years of age, when his father undertook to offer incenſe, and was ſtruck with a leproſy. The firſt of the prophecies of Amos, in order of time, are thoſe of the 7th chapter: the reſt he pronounced in the town of Tekoa, whither he retired. He foretold the misfortunes which the kingdom of Iſrael ſhould fall into after the death of Jeroboam II. who was then living; he foretold the death of Zechariah, the invaſion of the lands belonging to Iſrael by Pul and Tiglath-pilneſer kings of Aſſyria; and he ſpeaks of the captivity of the ten tribes, and their return.

The time and manner of this prophet's death are not known. Some old authors relate that Amaziah, prieſt of Bethel, provoked by the diſcourſes of the prophet, had his teeth broke, in order to ſilence him. Others ſay, that Hoſea or Uzziah, the ſon of Amaziah, ſtruck him with a ſtake upon the temples, knocked him down, and wounded him much; in which condition he was carried to Tekoa, where he died, and was buried with his fathers; but it is generally thought that he propheſied a long time at Tekoa, after the adventure which he had with Amaziah; and the prophet himſelf taking no notice of the ill treatment

Amoy ‖ Amphiaraus.

ment which he is said to have received, is an argument that he did not suffer in the manner they relate.

St Jerome observes, that there is nothing great or sublime in the style of Amos. He applies the words of St Paul (2 Cor. vi. 6.) to him, 'rude in speech though not in knowledge.' And he farther observes, that he borrows his comparisons from the state and profession to which he belonged.

AMOY, an island in the province of Fokien, in China, where the English had a factory: but they have abandoned it on account of the impositions of the inhabitants. E. Long. 118. 0. N. Lat. 24. 30. It has a fine port, that will contain many thousand vessels. The emperor has a garrison here of 7000 men.

AMPELIS, the VINE. See VITIS, BOTANY *Index*.

AMPELIS, the *Chatterer*. See ORNITHOLOGY *Index*.

AMPELITES, CANNEL-COAL, or CANDLE-COAL, a hard, opaque, fossil, inflammable substance, of a black colour. It does not effervesce with acids. The ampelites, though much inferior to jet in many respects, is yet a very beautiful fossil; and, for a body of so compact a structure, remarkably light. Examined by the microscope, it appears composed of innumerable very small and thin plates, laid closely and firmly on one another; and full of very small specks of a blacker and more shining matter than the rest, which is evidently a purer bitumen than the general mass. These specks are equally diffused over the different parts of the masses. There is a large quarry of it near Alençon in France. It is dug in many parts of England, but the finest is in Lancashire and Cheshire; it lies usually at considerable depths. It makes a very brisk fire, flaming violently for a short time, and after that continuing red and glowing hot a long while; and finally is reduced into a small proportion of gray ashes, the greater part of its substance having flown off in the burning.—It is capable of a very high and elegant polish; and in the countries where it is produced, is turned into a vast number of toys, as snuff-boxes and the like, which bear all the nicety of turning, and are made to pass for jet. Husbandmen smear their vines with it, as it kills the vermine which infests them. It is likewise used for the dyeing of hair black. In medicine, it is reputed good in colics, against worms, and as being in general an emollient and discutient; but the present practice takes no notice of it.

AMPELUSIA, in *Ancient Geography*, a promontory of Mauritania Tingitana, called *Cottes* by the natives, which is of the same signification with a town of the same name not far from the river Lixus, near the straits of Gibraltar; now *Cape Spartel*. W. Long. 6. 30. N. Lat. 36. 0.

AMPHERES, in antiquity, a kind of vessels wherein the rowers plied two oars at the same time, one with the right hand and another with the left.

AMPHIARAUS, in *Pagan Mythology*, a celebrated prophet, who possessed part of the kingdom of Argos. He was believed to excel in divining by dreams, and is said to be the first who divined by fire. Amphiaraus knowing, by the spirit of prophecy, that he should lose his life in the war against Thebes, hid himself in order to avoid engaging in that expedition: but his wife Eriphyle, being prevailed upon by a present, discovered the place in which he had concealed himself; so that he was obliged to accompany the other princes who marched against Thebes. This proved fatal to him; for the earth being split asunder by a thunderbolt, both he and his chariot were swallowed up in the opening. Amphiaraus, after his death, was ranked among the gods; temples were dedicated to him; and his oracle, as well as the sports instituted to his honour, were very famous. Amphiaraus. Amphitrite.

AMPHIARTHROSIS, in *Anatomy*, a term for such junctures of bones as have an evident motion, but different from the diarthrosis, &c. See DIARTHROSIS.

AMPHIBIA, in *Zoology*, the name of Linnæus's third class of animals; including all those which live partly in water and partly on land. This class he subdivides into four orders, viz. the amphibia reptiles; the amphibia serpentes; the amphibia nantes; and the amphibia meantes.

It has been a question whether the animals commonly called *amphibious*, live most in the water or on land. If we consider the words αμφι (*utrinque*, both ways), and βιος (*vita*, life), from which the term *amphibious* is derived; we should understand, that animals, having this title, should be capable of living as well by land, or in the air, as by water; or of dwelling in either constantly at will: but it will be difficult to find any animal that can fulfil this definition, as being equally qualified for either. An ingenious naturalist *, therefore, from considering their economy respectively, divide them into two orders, viz. 1. Such as enjoy their chief functions by land, but occasionally go into the water. 2. Such as chiefly inhabit the water, but occasionally go ashore. What he advances on this subject is curious, and well illustrates the nature of this class.

* Dr *Parsons*; in a paper read before the Royal Society.

1. Of the first order, he particularly considers the phocæ; and endeavours to show, that none of them can live chiefly in the water, but that their chief enjoyment of the functions of life is on shore.

These animals (he observes) are really quadrupeds; but, as their chief food is fish, they are under a necessity of going out to sea to hunt their prey, and to great distances from shore; taking care that, however great the distance, rocks or small islands are at hand, as resting places when they are tired, or when their bodies become too much macerated in the water; and they return to the places of their usual resort to sleep, copulate, and bring forth their young, for the following reasons, viz. It is well known, that the only essential difference (as to the general structure of the heart) between amphibious and mere land animals, or such as never go into the water, is, that in the former the oval hole remains always open. Now, in such as are without this hole, if they were to be immersed in water for but a little time, respiration would cease, and the animal must die; because a great part of the mass of blood passes from the heart by the pulmonary artery through the lungs, and by the pulmonary veins returns to the heart, while the aorta is carrying the greater part of the mass to the head and extremities, &c.

Now, the blood passes through the lungs in a continual uninterrupted stream, while respiration is gentle and moderate; but when it is violent, then the circulation is interrupted, for inspiration and exspiration are now carried to their extent; and in this state the blood cannot pass through the lungs either during the total

Amphibia. inſpiration or total exſpiration of the air in breathing: for, in the former caſe, the inflation compreſſes the returning veins; and in the latter, by the collapſion of the lungs, theſe veins are interrupted alſo; ſo that it is only between theſe two violent actions that the blood can paſs: and hence it is, that the lives of animals are ſhortened, and their health impaired, when they are ſubjected to frequent violent reſpiration; and thus it is, that when animals have once breathed, they muſt continue to reſpire ever after, for life is at an end when that ceaſes.

There are three neceſſary and principal uſes of reſpiration in all land animals, and in thoſe kinds that are counted amphibious. The firſt is that of promoting the circulation of the blood through the whole body and extremities. In real fiſhes, the force of the heart is alone capable of ſending the blood to every part, as they are not furniſhed with limbs or extremities; but in the others mentioned, being all furniſhed with extremities, reſpiration is an aſſiſtant force to the arteries in ſending blood to the extremities; which, being ſo remote from the heart, have need of ſuch aſſiſtance, otherwiſe the circulation would be very languid in theſe parts: thus we ſee, that in perſons ſubject to aſthmatic complaints, the circulation grows languid, the legs grow cold and œdematous, and other parts ſuffer by the defect in reſpiration.—A ſecond uſe of breathing is, that in reſpiration, the variety of particles, of different qualities, which float always in the air, might be drawn into the lungs, to be inſinuated into the maſs of blood, being highly neceſſary to contemperate and cool the agitated maſs, and to contribute refined pabulum to the finer parts of it, which, meeting with the daily ſupply of chyle, ſerves to aſſimilate and more intimately mix the maſs, and render its conſtitution the fitter for ſupporting the life of the animal. Therefore it is, that valetudinarians, by changing foul or unwholeſome air for a free, good, open air, often recover from lingering diſeaſes.—A third principal uſe of reſpiration is, to promote the exhibition of voice in animals: which all thoſe that live on the land do according to their ſpecific natures.

From theſe conſiderations it appears, that the phocæ of every kind are under an abſolute neceſſity of making the land their principal reſidence. But there is another very convincing argument why they reſide on ſhore the greateſt part of their time: namely, that the fleſh of theſe creatures is analogous to that of other land animals; and therefore, by over long maceration, added to the fatigue of their chaſing their prey, they would ſuffer ſuch a relaxation as would deſtroy them. It is well known, that animals which have lain long under water are reduced to a very lax and even putrid ſtate; and the phoca muſt baſk in the air on ſhore: for while the ſolids are at reſt, they acquire their former degree of tenſion, and the vigour of the animal is reſtored: and while he has an uninterrupted placid reſpiration, his blood is refreſhed by the new ſupply of air, as explained above, and he is rendered fit for his next cruiſe: for action waſtes the moſt exalted fluids of the body, more or leſs, according to its duration and violence: and the reſtorative reſt muſt continue a longer or ſhorter time, according to the quantity of the previous fatigue.

Let us now examine by what power theſe animals are capable of remaining longer under water than land animals. Amphibia.

All theſe have the oval hole open between the right and left auricles of the heart; and, in many, the canalis arterioſus alſo: and while the phoca remains under water, which he may continue an hour or two more or leſs, his reſpiration is ſtopped; and the blood, not finding the paſſage through the pulmonary artery free, ruſhes through the hole from the right to the left auricle, and partly through the arterial canal, being a ſhort paſſage to the aorta, and thence to every part of the body, maintaining the circulation: but, upon riſing to come aſhore, the blood finds its paſſage again through the lungs the moment he reſpires.

Thus the fœtus in utero, during its confinement, having the lungs compreſſed, and conſequently the pulmonary arteries and veins impervious, has the circulation of the blood carried on through the oval hole and the arterial canal. Now, ſo far the phoca in the water, and the fœtus in utero, are analogous; but they differ in other material circumſtances. One is, that the fœtus having never reſpired, remains ſufficiently nouriſhed by the maternal blood circulating through him, and continues to grow till the time of his birth, without any want of reſpiration during nine months confinement: the phoca, having reſpired the moment of his birth, cannot live very long without it, for the reaſons given before; and this hole and canal would be cloſed in them, as it is in land animals, if the dam did not, ſoon after the birth of the cub, carry him ſo very frequently into the water to teach him; by which practice theſe paſſages are kept open during life, otherwiſe they would not be capable of attaining the food deſigned for them by Providence.

Another difference is, that the phoca, as was ſaid before, would be relaxed by maceration in remaining too long in the water; whereas the fœtus in utero ſuffers no injury from continuing its full number of months in the fluid it ſwims in: the reaſon is, that water is a powerful ſolvent, and penetrates the pores of the ſkins of land animals, and in time can diſſolve them; whereas the *liquor amnii* is an inſipid ſoft fluid, impregnated with particles more or leſs mucilaginous, and utterly incapable of making the leaſt alteration in the cutis of the fœtus.

Otters, beavers, and ſome kinds of rats, go occaſionally into the water for their prey, but cannot remain very long under water. "I have often gone to ſhoot otters (ſays our author), and watched all their motions; I have ſeen one of them go ſoftly from a bank into the river, and dive down; and in about two minutes riſe at 10 or 15 yards from the place he went in, with a middling ſalmon in his mouth, which he brought on ſhore: I ſhot him, and ſaved the fiſh whole." Now as all fœtuſes have theſe paſſages open, if a whelp of a true water ſpaniel was, immediately after its birth, ſerved as the phoca does her cubs, and immerſed in water, to ſtop reſpiration for a little time every day, it is probable that the hole and canal would be kept open, and the dog be made capable of remaining as long under water as the phoca.

Frogs, how capable ſoever of remaining in the water, yet cannot avoid living on land, for they reſpire; and if a frog be thrown into a river, he makes to the ſhore as faſt as he can.

The

Amphibia. The lizard kind, ſuch as may be called water lizards (ſee LACERTA), are all obliged to come to land, in order to depoſite their eggs, to reſt, and to ſleep. Even the crocodiles, who dwell much in rivers, ſleep and lay their eggs on ſhore; and, while in the water are compelled to riſe to the ſurface to breathe; yet, from the texture of their ſcaly covering, they are capable of remaining in the water longer by far than any ſpecies of the phoca, whoſe ſkin is analogous to that of a horſe or cow.

The hippopotamus, who wades into the lakes or rivers, is a quadruped, and remains under the water a conſiderable time; yet his chief reſidence is upon land, and he muſt come on ſhore for reſpiration.

The teſtudo, or ſea-tortoiſe, though he goes out to ſea and is often found far from land; yet being a reſpiring animal, cannot remain long under water. He has indeed a power of rendering himſelf ſpecifically heavier or lighter than the water, and therefore can let himſelf down to avoid an enemy or a ſtorm: yet he is under a neceſſity of riſing frequently to breathe, for reaſons given before; and his moſt uſual ſituation, while at ſea, is upon the ſurface of the water, feeding upon the various ſubſtances that float in great abundance everywhere about him; theſe animals ſleep ſecurely upon the ſurface, but not under water; and can remain longer at ſea than any other of this claſs, except the crocodile, becauſe as it is with the latter, his covering is not in danger of being too much macerated; yet they muſt go on ſhore to copulate and lay their eggs.

2. The conſideration of theſe is ſufficient to inform us of the nature of the firſt order of the claſs of amphibious animals; let us now ſee what is to be ſaid of the ſecond in our diviſion of them, which are ſuch as chiefly inhabit the waters, but occaſionally go on ſhore;

Theſe are but of two kinds: the eels, and water ſerpents or ſnakes of every kind. It is their form that qualifies them for loco-motion on land, and they know their way back to the water at will; for by their ſtructure they have a ſtrong periſtaltic motion, by which they can go forward at a pretty good rate: whereas all other kinds of fiſh, whether vertical or horizontal, are incapable of a voluntary loco-motion on ſhore; and therefore, as ſoon as ſuch fiſh are brought out of the water, after having flounced a while, they lie motionleſs and ſoon die.

Let us now examine into the reaſon why theſe vermicular fiſh, the eel and ſerpent kinds, can live a conſiderable time on land, and the vertical and horizontal kinds die almoſt immediately when taken out of the water: and, in this reſearch, we ſhall come to know what analogy there is between land animals and thoſe of the waters. All land animals have lungs, and can live no longer than while theſe are inflated by the ambient air, and alternately compreſſed for its expulſion; that is, while reſpiration is duly carried on, by a regular inſpiration and exſpiration of air.

In like manner, the fiſh in general have, inſtead of lungs, gills or branchiæ: and as in land animals the lungs have a large portion of the maſs of blood circulating through them, which muſt be ſtopped if the air has not a free ingreſs and egreſs into and from them; ſo, in fiſh, there is a great number of blood veſſels that paſs through the branchiæ, and a great portion of their blood circulates through them, which muſt in like manner be totally ſtopped, if the branchiæ are not perpetually wet with water. So that, as the air is to the lungs in land animals a conſtant aſſiſtant to the circulation; ſo is the water to the branchiæ of thoſe of the rivers and ſeas: for when theſe are out of the water, the branchiæ very ſoon grow criſp and dry, the blood veſſels are ſhrunk, and the blood is obſtructed in its paſſage; ſo, when the former are immerſed in water, or otherwiſe prevented from having reſpiration, the circulation ceaſes, and the animal dies. Amphibia.

Again, as lands animals would be deſtroyed by too much maceration in water; ſo fiſhes would, on the other hand, be ruined by too much exſiccation: the latter being, from their general ſtructure and conſtitution, made fit to bear, and live in, the water; the former, by their conſtitution and form, to breathe and dwell in the air.

But it may be aſked, Why eels and water ſnakes are capable of being longer in the air than the other kinds of fiſh? This is anſwered, by conſidering the providential care of the great Creator for theſe and every one of his creatures: for ſince they were capable of locomotion by their form, which they need not be if they were never to go on ſhore, it ſeemed neceſſary that they ſhould be rendered capable of living a conſiderable time on ſhore, otherwiſe their loco-motion would be in vain. How is this provided for? Why, in a moſt convenient manner; for this order of fiſhes have their branchiæ well covered from the external drying air; they are alſo furniſhed with a ſlimy mucus, which hinders their becoming criſp and dry for many hours; and their very ſkins always emit a mucous liquor, which keeps them ſupple and moiſt for a long time: whereas the branchiæ of other kinds of fiſh are much expoſed to the air, and want the ſlimy matter to keep them moiſt. Now, if any of theſe, when brought out of the water, were laid in a veſſel without water, they might be preſerved alive a conſiderable time, by only keeping the gills and ſurface of the ſkin conſtantly wet, even without any water to ſwim in.

It has been advanced, that man may, by art, be rendered amphibious, and able to live under water as well as frogs. As the fœtus lives *in utero* without air, and the circulation is there continued by means of the foramen ovale; by preſerving the paſſage open, and the other parts *in ſtatu quo*, after the birth, the ſame faculty would ſtill continue. Now, the foramen, it is alleged, would be preſerved in its open ſtate, were people accuſtomed, from their infancy, to hold their breath a conſiderable time once a-day, that the blood might be forced to reſume its priſtine paſſage, and prevent its drying up as it uſually does. This conjecture ſeems, in ſome meaſure, ſupported by the practice of divers, who are taught from their childhood to hold their breath, and keep long under water, by which means the ancient chanzel is kept open.—A Calabrian monk at Madrid laid claim to this amphibious capacity, making an offer to the king of Spain, to continue twice twenty-four hours under water, without ever coming up to take breath. Kircher gives an account of a Sicilian, named the *fiſh Colas*, who by a long habitude from his youth, had ſo accuſtomed himſelf to live in water, that his nature ſeemed to be quite altered; ſo that he lived rather after the manner of a fiſh than a man.

Amphibole || Amphictyons.

AMPHIBOLE. See MINERALOGY *Index*.

AMPHIBOLOGY, in *Grammar* and *Rhetoric*, a term uſed to denote a phraſe ſuſceptible of two different interpretations. Amphibology ariſes from the order of the phraſe, rather than from the ambiguous meaning of a word.

Of this kind was that anſwer which Pyrrhus received from the oracle: *Aio te, Æacida, Romanos vincere poſſe;* where the amphibology conſiſts in this, that the words *te* and *Romanos*, may either of them precede, or either of them follow, the words *poſſe vincere*, indifferently. See ORACLE.

The Engliſh language uſually ſpeaks in a more natural manner, and is not capable of any amphibologies of this kind: nor is it ſo liable to amphibologies in the articles as the French and moſt other modern tongues.

AMPHIBRACHYS, in Greek and Latin poetry, the name of a foot conſiſting of three ſyllables, whereof that in the middle is long, and the other two ſhort; ſuch are the words [ăbīrĕ, ămārĕ].

AMPHICOME, in *Natural Hiſtory*, a kind of figured ſtone, of a round ſhape, but rugged, and beſet with eminences, celebrated on account of its uſe in divination. The word is originally Greek, *αμφικομη, q. d. utrinque comata*, or, "hairy on all ſides." This ſtone is alſo called *Erotylos*, Ερωτυλος, *Amatoria*, probably on account of its ſuppoſed power of creating love. The amphicome is mentioned by Democritus and Pliny. Mercatus takes it for the ſame with the *lapis lumbricatus*, of which he gives a figure.

AMPHICTYONS, in Grecian antiquity, an aſſembly compoſed of deputies from the different ſtates of Greece; and reſembling, in ſome meaſure, the diet of the German empire. Some ſuppoſe the word Αμφικτιονες to be formed of *αμφι*, "about," and *κτιζειν* or *κτιζειν*, in regard the inhabitants of the country round about met here in council: others, with more probability, from Amphictyon, ſon of Deucalion, whom they ſuppoſe to have been the founder of this aſſembly; though others will have Acriſius, king of the Argives, to have been the firſt who gave a form and laws to it.

Authors give different accounts of the number of the Amphictyons, as well as of the ſtates who were entitled to have their repreſentatives in this council. According to Strabo, Harpocration, and Suidas, they were twelve from their firſt inſtitution, ſent by the following cities and ſtates; the Ionians, Dorians, Perrhæbians, Bœotians, Magneſians, Achæans, Phthians, Melians, Dolopians, Ænianians, Delphians, and Phocians. Æſchines reckons no more than eleven: inſtead of the Achæans, Ænianians, Delphians, and Dolopians, he only gives the Theſſalians, Oetians, and Locrians. Laſtly, Pauſanias's liſt contains only ten, viz. the Ionians, Dolopians, Theſſalians, Ænianians, Magneſians, Melians, Phthians, Dorians, Phocians, and Locrians.

In the time of Philip of Macedon, the Phocians were excluded the alliance, for having plundered the Delphian temple, and the Lacedæmonians were admitted in their place; but the Phocians, 60 years after, having behaved gallantly againſt Brennus and his Gauls, were reſtored to their ſeat in the Amphictyonic council. Under Auguſtus, the city Nicopolis was admitted into the body; and to make room for it, the Magneſians, Melians, Phthians, and Ænianians, who till then had diſtinct voices, were ordered to be numbered with the Theſſalians, and to have only one common repreſentative. Strabo ſpeaks as if this council were extinct in the times of Auguſtus and Tiberius: but Pauſanias, who lived many years after, under Antoninus Pius, aſſures us it remained entire in his time, and that the number of Amphictyons was then 30. Amphictyons || Amphilochia.

The members were of two kinds. Each city ſent two deputies, under different denominations; one called Ιερομνημων, whoſe buſineſs ſeems to have been more immediately to inſpect what related to ſacrifices and ceremonies of religion; the other, Πυλαγορας, charged with hearing and deciding of cauſes and differences between private perſons. Both had an equal right to deliberate and vote, in all that related to the common intereſts of Greece. The *hieromnemon* was elected by lot, the *pylagoras* by plurality of voices.

Though the Amphictyons were firſt inſtituted at Thermopylæ, M. de Valois maintains, that their firſt place of reſidence was at Delphi; where, for ſome ages, the tranquillity of the times found them no other employment than that of being, if we may ſo call it, church-wardens of the temple of Apollo. In after times, the approach of armies frequently drove them to Thermopylæ, where they took their ſtation, to be nearer at hand to oppoſe the enemies progreſs, and order timely ſuccour to the cities in danger. Their ordinary reſidence, however, was at Delphi.

Here they decided all public differences and diſputes between any of the cities of Greece; but before they entered on buſineſs, they jointly ſacrificed an ox cut into ſmall pieces, as a ſymbol of their union. Their determinations were received with the greateſt veneration, and even held ſacred and inviolable.

The Amphictyons, at their admiſſion, took a ſolemn oath never to diveſt any city of its right of deputation; never to avert its running waters: and if any attempts of this kind were made by others, to make mortal war againſt them: more particularly, in caſe of any attempt to rob the temple of any of its ornaments, that they would employ hands, feet, tongue, their whole power to revenge it.—This oath was backed with terrible imprecations againſt ſuch as ſhould violate it; *e.g.* May they meet all the vengeance of Apollo, Diana, Minerva, &c. their ſoil produce no fruit, their wives bring forth nothing but monſters, &c.

The ſtated terms of their meeting were in ſpring and autumn: the ſpring meeting was called Εαρινη Πυλαια, that in autumn Μετοπωρινη. On extraordinary occaſions, however, they met at any time of the year, or even continued ſitting all the year round.

Philip of Macedon uſurped the right of preſiding in the aſſembly of the Amphictyons, and of firſt conſulting the oracle which was called Προμαντεια.

AMPHIDROMIA, a feaſt celebrated by the ancients on the firſt day after the birth of a child.

AMPHIDRYON, in eccleſiaſtical writers, denotes the veil or curtain which was drawn before the door of the *Icma* in ancient churches.

AMPHILOCHIA, in *Ancient Geography*, the territory of the city of Argos in Acarnania: *Amphilochium*, (Thucydides); called *Amphilochi* (from the people), in the lower age, (Stephanus.) A town alſo of Spain, in Galicia, built by Teucer, and denominated

Amphilochius ‖ Amphisbæna.

nated from Amphilochus one of his companions. (Strabo): now *Orenſe*. W. Long. 8. 20. Lat. 42. 36.

AMPHILOCHIUS, biſhop of Iconium, in the fourth century, was the friend of St Gregory Nazianzen and St Baſil. He aſſiſted at the firſt general council of Conſtantinople in 381; preſided at the council of Side; and was a ſtrenuous oppoſer of the Arians. He died in 394; and his works were publiſhed in Greek and Latin at Paris 1644, by Francis Combefis.

AMPHILOCHUS, ſon of Amphiaraus and Eriphyle, was a celebrated diviner. He had an altar erected to him at Athens, and an oracle at Mallus in Cilicia, which city was founded by him and Mopſus. The anſwers of this oracle were given by dreams; the party inquiring uſed to paſs a night in the temple, and that night's dream was the anſwer. Dion Caſſius mentions a picture done by order of Sextus Condianus, repreſenting the anſwer he received of the oracle, in the reign of the emperor Commodus.

AMPHIMACER, in ancient poetry, a foot conſiſting of three ſyllables; whereof the firſt and laſt are long, and that in the middle ſhort; ſuch is the word [cāſtĭtās.]

AMPHION, ſon of Jupiter and Antiope; who, according to the poets, made the rocks follow his muſic; and at his harp the ſtones of Thebes danced into walls and a regular city.

AMPHIPOLES, in antiquity, the principal magiſtrates of Syracuſe. They were eſtabliſhed by Timoleon in the 109th Olympiad, after the expulſion of the tyrant Dionyſius. They governed Syracuſe for the ſpace of 300 years: and Diodorus Siculus aſſures us, that they ſubſiſted in his time.

AMPHIPOLIS, in *Ancient Geography*, a city of Macedonia, an Athenian colony, on the Strymon, but on which ſide is not certain: Pliny places it in Macedonia, on this ſide; but Scylax, in Thrace, on the other. The name of the town, *Amphipolis*, however, ſeems to reconcile their difference; becauſe, as Thucydides obſerves, it was waſhed on two ſides by the Strymon, which dividing itſelf into two channels, the city ſtood in the middle, and on the ſide towards the ſea there was a wall built from channel to channel. Its ancient name was Ἐννέα ὁδοί, the *Nine ways* (Thucydides, Herodotus.) The citizens were called *Amphipolitani*, (Livy). It was afterwards called *Criſſopolis*; now *Chriſopoli*, or *Chiſopoli*, (Holſtenius).

AMPHIPOLIS, in *Ancient Geography*, a town of Syria, on the Euphrates, built by Seleucus, called by the Syrians *Turmeda*, (Stephanus): the ſame with *Thapſacus*, (Pliny); and ſuppoſed to have been only renewed and adorned by Seleucus, becauſe long famous before his time, (Xenophon.)

AMPHIPPII, in Grecian antiquity, ſoldiers who, in war, uſed two horſes without ſaddles, and were dexterous enough to leap from one to the other.

AMPHIPRORÆ, in the naval affairs of the ancients, veſſels with a prow at each end. They were uſed chiefly in rapid rivers and narrow channels, where it was not eaſy to tack about.

AMPHIPROSTYLES, in the architecture of the ancients, a temple which had four columns in the front, and as many in the aſpect behind.

AMPHISBÆNA. See Ophiology *Index*.

Amphisbæna Aquatica. See Gordius, Helminthology *Index*.

Amphiſcia ‖ Amphitheatre.

AMPHISCII, among geographers, a name applied to the people who inhabit the torrid zone. The Amphiſcii, as the word imports, have their ſhadows one part of the year towards the north, and the other towards the ſouth, according to the ſun's place in the ecliptic. They are alſo called *Aſcii*. See Ascii.

AMPHISSA, in *Ancient Geography*, the capital of the Locri Ozolæ, 120 ſtadia (or 15 miles) to the weſt of Delphi, (Pauſanias). So called, becauſe ſurrounded on all ſides by mountains, (Strabo). Hence *Amphiſſæi*, the inhabitants; who plundered the temple at Delphi (Demoſthenes.)—Alſo a town of Magna Græcia at the mouth of the Sagra, on the coaſt of the Farther Calabria, ſituated between Locri and Caulona; now called *Kocala*. *Amphiſſias* the epithet, (Ovid.)

AMPHITHEATRE, in ancient architecture, a building of an elliptic form, of two or more ſtories of open arcades, with a number of interior galleries and arched paſſages, which ſerved both as a communication and ſupport to ſeveral rows of ſeats which roſe above each other, and were arranged round a large ſpace called the *arena*. The derivation of the word *amphitheatre*, indicates that it is a place where the ſpectators, circuitouſly arranged, ſaw the performance equally well on all ſides.

The hiſtory of amphitheatres is of conſiderable importance, in conſequence of its connexion with ancient manners. Theſe ſtructures owed their origin to the barbarity of the ancients, and their ruin to the humanity of the moderns. They are the production of Roman invention in the laſt ages of the republic. The ferocious diſpoſition of the Romans was immoderately fond of every ſpecies of amuſement; but eſpecially that which was of a bloody and horrible nature. The political rulers improved this general feature in the Roman character, to rouſe and foſter that martial ſpirit which rendered them maſters of the world. After the Samnite war had extended the Roman ſceptre over Etruria and the whole peninſula of Italy, the firſt gladiatory conflicts were exhibited in Rome in the year of the city 490. Lucius Metellus brought into the circus the elephants which were part of the ſpoil of the Carthaginians, in the year 502, and this proved the introduction of wild beaſts into the ſpectacles of Rome. This addition was equally agreeable to the Roman taſte; and thoſe who courted the popular favour, vied with each other in entertaining the people in this barbarous manner. This ſoon gave birth to a profeſſion of men denominated *gladiators*, who were trained to the combat, and for reward ſlaughtered one another in the forum, whilſt every devouring animal which the wilds of Aſia or Africa produced, added to the horrid ſcene.

In the days of Pompey and Cæſar theſe barbarous amuſements were given with an aſtoniſhing profuſion. In theſe games given by Pompey, the elephants attempted to break down the barrier between them and the people, and the ſituation of the circus prevented the people from ſeeing equally well: this induced Cæſar to alter the original form, and conſtruct edifices where the populace might be entertained without danger or interruption. Amphitheatres were ſuited

to

Amphitheatre.

to this purpoſe; therefore they were adopted, and became the common place for the exhibitions both of gladiators and wild beaſts.

It is ſuppoſed, that the firſt amphitheatre was compoſed of thoſe ſingular machines, formed by Caius Curio; for the games which Cæſar preſented among the funeral honours of his father. In a ſemicircular form Caius made two large theatres, and oppoſed their backs to each other: and, having amuſed the people in theſe the one half of the day, then they wheeled round, forming one ſpacious theatre where the gladiators contended during the remainder of the day. Pliny is the only one who makes mention of this amphitheatre; and from his account it is difficult to aſcertain whether this was the firſt idea of an amphitheatre, or whether the previous ſight of one had ſuggeſted this huge and wonderful ſtructure. It is reported, that Julius Cæſar, a few years after, formed a hunting theatre of wood; and, in conſequence of the circular poſition of the ſeats, it obtained the name of an *amphitheatre*. This appears to have been of very ſuperior kind and in great eſtimation.

In the reign of Auguſtus, Statilius Taurus erected one of ſtone, but it ſeems to have been ſeldom uſed; and, from its being conſumed by fire in the time of Nero, it is evident that it was not wholly of ſtone. Theſe wooden buildings appear to have been temporary, and a few of them permanent from the embelliſhment conferred upon them. The politic ſpirit of Auguſtus induced him to erect ſeveral of theſe, and Caligula began one, which he left unfiniſhed. Nero formed a large and ſpacious one, which is ſaid to have been a year in building. Herod of Judea erected amphitheatres both in Jeruſalem and in Cæſarea. During the reign of Tiberius, one was built at Fidenæ, which Tacitus informs us fell while the games were performing, and ſlew or hurt about 50,000 perſons. There was another at Placentia, reported to have been the moſt ſpacious in Italy; but it was deſtroyed by fire in the conteſt between Vitellius and Otho.

The unfortunate accidents, which happened to theſe wooden buildings, led the public to conſtruct others of a more durable and ſtronger nature, where the crowd might be entertained without danger. This honour was reſerved to Veſpaſian and Titus. In his eighth conſulate, the former began the Flavian amphitheatre, which the latter finiſhed during his reign. It is ſaid, that the expence of this building would have erected a capital city, and it is deſervedly eſteemed one of the moſt celebrated edifices of ancient times. Dio ſays, that 9000 wild beaſts were deſtroyed at the dedication of this huge building, but Eutropius reſtricts their number to 5000. After the hunting of theſe ferocious animals was ended, inſtantly the arena was filled with water, and ſea animals were made to contend, and a ſea-fight exhibited. This immenſe building obtained the appellation of the *Coliſeum*. See Plate XX. fig. 1.

This amphitheatre became the model of other amphitheatres throughout the empire. Compared with the original model, theſe were merely natural valleys, with ſeats formed in the ſurrounding heights ſimilar to the amphitheatre at Corinth. On the declivity of two hills ſeats of ſtone were ſometimes placed, and the extremes formed by regular works of ſtone. Of this kind was that of Gortyna in Candia. One in the vicinity of Sandwich in Kent had its benches formed of turf; and ſimilar muſt have been thoſe amphitheatres, which were formed along with the camps and military ſtations of the Roman ſoldiers.

Amphitheatre.

When Chriſtianity became the religion of the empire, it meliorated the diſpoſitions of the Romans, and induced them to lay aſide this barbarous cuſtom. Conſtantine the Great terminated the gladiatory combats in the eaſt during his reign; but they were not finally aboliſhed at Rome until the beginning of the fifth century, in the reign of Honorius. The combats of wild beaſts continued, however, ſome time longer; but during the progreſs of the fifth century theſe gradually declined, until they were finally aboliſhed, and the amphitheatres were abandoned to the ravages of time and accident. During the middle ages they were ſometimes employed for judicial conflicts, tilts, and tournaments; but theſe practices having been diſcontinued, the amphitheatres experienced univerſal neglect and ruin.

Conſtruction.

It is very difficult to give an accurate deſcription of an amphitheatre. It is ſcarcely poſſible to give a clear idea of the manner in which ſuch immenſe crowds of people were ſeated and arranged, and how they had a convenient entrance and a returning. It has already been mentioned, that theſe buildings were circuitous, and that the exterior circuit was compoſed of two or more ſtories of arcades; and it may now be added, that the number of theſe ſtories varied according to the nature of the building. A correſponding number of arched paſſages and ſtaircaſes opened upon the ground floor towards theſe ſtories in the direction of radii towards the arena. Theſe communications were again interſected by arched paſſages which encircled the whole ſtructure, and afforded an uninterrupted entrance to every part of the amphitheatre. Sometimes an intermediate gallery ſurrounded the whole in the centre of the fabric, and ſerved as a common place of reſort to all the ſtairs which led to the higher galleries. This was the form of one at Niſmes. Sometimes each ſtaircaſe had its diſtinct communication by itſelf. Such was the caſe with one at Verona. See Plate XX. fig. 2.

The four radiating entries on the diameter were uſually more capacious; and by the two principal of theſe the emperor, the ſenate, and other perſons of diſtinction, were conducted to their ſeats on a place which was called the *podium*. The other two led to the arena, and by theſe the gladiators and beaſts made their entrance. The various ranks of the people paſſed by to the ſtaircaſes, which led to their reſpective ſeats. The doors which opened from the ſtaircaſes were called *vomitories*, and varied in magnitude, according to the extent of the amphitheatre, and the number of exterior arches. The number of ſeats between the ſeveral vomitories was unequal, and ſeems to have been ſubject to no poſitive regulation. Theſe benches were about one foot and eight inches in height, and about two feet four inches in breadth. A platform four feet eight inches broad was formed of one of theſe benches, which ſerved as a circular communication to the whole building. Theſe obtained the name of *precinctions*, and the boundaries on the ſide were called *belts*. The latter were ſurmounted by balluſtrades, to protect the perſons from falling who occupied

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occupied the benches in the vicinity. The podium was more ſpacious than the precinctions, and was a platform encircling the arena. From one precinction to the belt of another, a flight of ſtairs two feet ſix inches in breadth deſcended oppoſite to every vomitory. Small canals were cut in the tops of the benches, by which the rain and urine were conducted from bench to bench, until they reached the inſtruments prepared to convey them to the drains below. Theſe ſtairs radiated from the higheſt bench to the podium; ſo that, with the precinctions, they ſeparated the whole cavity into wedge-like diviſions, which the people occupied according to their rank.

The amphitheatre called the *Coliſeum*, was of an elliptical form, whoſe longeſt diameter was about 615 Engliſh feet ſix inches, and the ſhorteſt 510. The length of the diameter of the arena was about 281 feet, and the breadth 176, reſerving a ſpace for the ſeats and galleries of about 157 feet in breadth. The external circumference covered a ſuperficies of about five acres and a half, and could ſcarcely be included in a parallelogram of ſeven acres. Three ſtories of arcades, adorned with columns of the Doric, Ionic, and Corinthian orders, and encloſed with a pilaſtrade of the Corinthian order, compoſed the external elevation. The firſt ſtory roſe about four feet from the ground, and the pavement ſupported the baſis of the columns. The columns which ſupported the upper ſtories were placed upon pedeſtals. A ſtylobata ſupported the pilaſtrade, in which were the windows of an intermediate gallery, and in every ſecond interpilaſter was a window to illuminate the higheſt gallery. A cantaliver cornice, perforated with ſquare holes, through which the erect pieces of wood paſſed that ſupported the awning to a range of corbels, about the centre of the pilaſtrade, crowned the building. Theſe various columns, pilaſters, and ſtories, appear to have been continued without interruption around the whole edifice. The height of the firſt ſtory is about 33 feet ſix inches, the ſecond about 39, and the third about 38; the pilaſtrade about 46; and the whole, including the blocking courſe and the ſteps, was about 164 feet in height.

An ellipſis of 80 open arches formed the exterior circuit of the ground plan; the piers, with three-quarter columns in front, of about two feet 10 inches diameter. The four which correſponded to the four ſemi-diameters formerly mentioned, were about 14 feet two inches, and 76 of the arches were about 13 feet eight inches. Theſe arches led to a large double corridor, that encircled the whole; this corridor is a magnificent and diſtinguiſhing feature in the Coliſeum theatre. Square openings in the precinction above, illuminated the interior corridor, and the corridor which was united with the wall of the podium appears to have been illuminated in a ſimilar manner. A double corridor was ſeen on the floor of the ſecond ſtory directly above the corridor of the lower floor, and an interior corridor, which ſent forth ſtairs leading to a range of vomitories on the one hand, and on the other hand an intermediate corridor which formed a mezzanine floor above the double corridor of the interior circuit. Here the ſtairs began to aſcend to the next ſtory, and ſquare holes in the upper floor enlightened this gallery. A double corridor formed the third ſtory, and it appears that here the ſtairs commenced that led to the galleries above. There were alſo ſome windows in the interior wall, and vomitories which opened to the uppermoſt cunei of benches. In a ſimilar manner were other three ſtories conſtructed and filled above the whole, compoſing a moſt magnificent and ſpacious ſtructure. Amphitheatre.

Juſtus Lipſius ſuppoſes that this amphitheatre was capable of containing 87,000 ſpectators on the benches; and Fontana adds 22,000 for the galleries and other paſſages. Upon a fair calculation it appears, that if all was crowded, it might contain about 80,000. This magnificent ſtructure certainly excelled the monuments both of Grecian and Egyptian genius which have reached our times. When this amphitheatre was in its glory, and crowded with Romans, the ſight muſt have been magnificent and ſtriking. If the report is accurate, that this was completed in two years and nine months, it affords an aſtoniſhing inſtance of Roman vigour and perſevering induſtry. Beſides former depredations, Michael Angelo removed near the one half of the external wall to build the Palazzo Farneſe. To prevent theſe depredations, Pope Benedict XIV. conſecrated theſe ruins, and erected ſeveral altars, which were much frequented on the Sundays and Fridays, before the revolution in France. To guard theſe relicks, a hermit was ſtationed in a ſmall dwelling near the centre.

The different kinds of amuſement have already been mentioned during the progreſs of the hiſtory. Gladiators contended together, or entered the liſts with wild beaſts. Theſe wild animals were hunted or encountered, or left to devour each other, according to the humour of the times or the taſte of him who gave the entertainment. It appears alſo, that criminals were ſometimes forced to fight with theſe ferocious creatures for the entertainment of the people of Rome; and, in the dawn of Chriſtianity, many of the Chriſtians ſuffered death in this brutal manner. It is alſo reported, that artificial mountains were ſometimes conſtructed with caves below, from whence theſe devouring animals ruſhed forth to attack their prey. Amuſements.

Information concerning the laws that regulated the amphitheatre is rather ſcanty; but the following are among the number. In the centre of one ſide of the podium was the emperor's ſeat, called the *ſuggeſtum*, and highly adorned. The remainder of the podium was occupied by ſenators; and when this ſpace was not ſufficient, ſeveral of the adjacent wedges were appropriated to the other ſenators and to perſons of diſtinction. The equeſtrians, and the civil and military tribunes, had their places next aſſigned them. From this order both the liberti and the legati were excluded. The married men ſat by themſelves. The young men were alſo arranged by themſelves, and their tutors ſat near them to obſerve their conduct. The attendants and ſervants occupied the higheſt gallery. The veſtals were ſeated, and frequently the princeſſes and the ladies of diſtinguiſhed rank ſat along with them. The front of the gallery was aſſigned to the women, who were placed on chairs, and the loweſt order of plebeians ſtood behind them. It appears alſo, that for the better accommodation of the people, the different tribes had particular wedges allotted to them. It is alſo proper to remark, that the arrangements in the different provinces was different from that of Rome

Amphitheatre / Amphoraium.

as circumſtances varied. The general direction of the amphitheatre was under the care of an officer, named *villicus amphitheatri*; and different officers who were called *locarii*, had the direction of the cunei. By carefully preventing any perſon from occupying a place to which he was not entitled, all confuſion was prevented, and ſtrict order maintained.

Remains.

The means uſed by Pope Benedict to preſerve the Coliſeum at Rome, have already been mentioned. Of one which was erected at Verona, only four arches of the external circuit remained at the commencement of the eighteenth century. Theſe conſiſt of three ſtories of about 90 Engliſh feet. The whole building was erected without cement, and joined and ſecured by iron cramps, overlaid with lead. The whole ſuperficies is about four acres and nearly one third. One has been erected at Niſmes, which has ſuffered much dilapidation; but the remains are yet worthy of the attention of the traveller. In the year 1533, Francis I. gave orders to have the rubbiſh removed; but his misfortunes prevented this order from being carried into execution. Louis XVI. iſſued a ſimilar order, but the work is not yet finiſhed. This amphitheatre is ſaid, by Governor Pownall, to be occupied with houſes arranged in the form of ſtreets, and reſembles a ſmall walled town. The galleries are converted into wretched dwellings, but the exterior gallery of the ſecond ſtory, and that of the attic, were in their original ſtate.

At Pola in Iſtria, there are the remains of an amphitheatre built on the declivity of a hill. The whole of the exterior circuit was ſtanding, except a few yards of the parapet, when Maffei viſited theſe remains. It was erected of ſtone, with cramps of iron; and all the benches and other parts conſtructed of wood, have been deſtroyed.

AMPHITHEATRE, in gardening, certain diſpoſitions of trees and ſhrubs on the ſides of hilly places, which, if the hill or riſing be naturally of a circular figure, always have the beſt effect. They are to be formed of evergreens, ſuch as hollies, phillereys, lauruſtines, bays, and ſuch plants, obſerving to plant the ſhorteſt growing trees in the front, and thoſe which will be the talleſt behind, ſuch as pines, firs, cedars of Lebanon, &c.

Amphitheatres are alſo ſometimes formed of ſlopes on the ſides of hills, covered only with turf; and, when well kept, they are a great ornament to large gardens.

AMPHITRITE, (from *αμφιτρεπω. circumferendo*), in the heathen mythology, the wife of Neptune, and goddeſs of the ſea, ſometimes taken for the ſea.

AMPHITRYON, ſon of Alcæus, and the father of Hercules, leſs known by his own exploits than from his wife Alcmena's adventure. See ALCMENA.

AMPHORA, in antiquity, a liquid meaſure among the Greeks and Romans. The Roman amphora contained 48 ſextaries, equal to about ſeven gallons one pint Engliſh wine meaſure; and the Grecian or Attic amphora contained one-third more.

AMPHORA was alſo a dry meaſure uſed by the Romans, and contained about three buſhels.

AMPHORA, among the Venetians, is the largeſt meaſure uſed for liquids, containing about 16 quarts.

AMPHORARIUM VINUM, in antiquity, denotes that which is drawn or poured into *amphoræ* or pitchers; by way of diſtinction from *vinum doliare*, or caſk wine.—The Romans had a method of keeping wine in *amphoræ* for many years to ripen, by faſtening the lids tight down with pitch or gypſum, and placing them either in a ſituation within reach of ſmoke, or under ground.

Amphetides || Ampſaga.

AMPHOTIDES, in antiquity, a kind of armour or covering for the ears, worn by the ancient pugiles, to prevent their adverſaries from laying hold of that part.

AMPHRYSUS, or AMPHRYSSUS, in *Ancient Geography*, a river of Phthiotis, a diſtrict of Theſſaly, running by the foot of Mount Othrys, from ſouth to north, into the Enipeus at Thebes of Theſſaly; where Apollo fed the herds of King Admetus (Virgil, Lucan). Another Amphryſus in Phrygia, rendering women barren, according to Pliny: Hence the epithet *Amphryſiacus* (Statius). Alſo a town of Phocis, at the foot of Mount Parnaſſus, encompaſſed with a double wall by the Thebans in the war with Philip (Pauſanias): *Amphryſia Vates*, in Virgil, denotes the Sibyl.

AMPHTHILL, a town of Bedfordſhire in England, ſituated pleaſantly between two hills, near the centre of the county, but in a barren ſoil. W. Long. 0. 29. N. Lat. 52. 2.

AMPLIATION, in a general ſenſe, denotes the act of enlarging or extending the compaſs of a thing.

On a medal of the emperor Antoninus Pius, we find the title *Ampliator civium* given him, on account of his having extended the *jus civitatis*, or right of citizenſhip, to many ſtates and people before excluded from that privilege. In effect, it is generally ſuppoſed to have been this prince that made the famous conſtitution, whereby all the ſubjects of the empire were made citizens of Rome.

AMPLIATION, in Roman antiquity, was the deferring to paſs ſentence in certain cauſes. This the judge did, by pronouncing the word *amplius*; or by writing the letters N. L. for *non liquet*; thereby ſignifying, that, as the cauſe was not clear, it would be neceſſary to bring further evidence.

AMPLIFICATION, in *Rhetoric*, part of a diſcourſe or ſpeech, wherein a crime is aggravated, a praiſe or commendation heightened, or a narration enlarged, by an enumeration of circumſtances: ſo as to excite the proper emotions in the ſouls of the auditors. Such is the paſſage in Virgil, where, inſtead of ſaying merely that Turnus died, he amplifies the circumſtances of his death:

—Aſt illi ſolvuntur frigore membra,
Vitaque cum gemitu fugit indignata ſub umbras.

The maſters of eloquence make an amplification to be the ſoul of diſcourſe. See ORATORY.

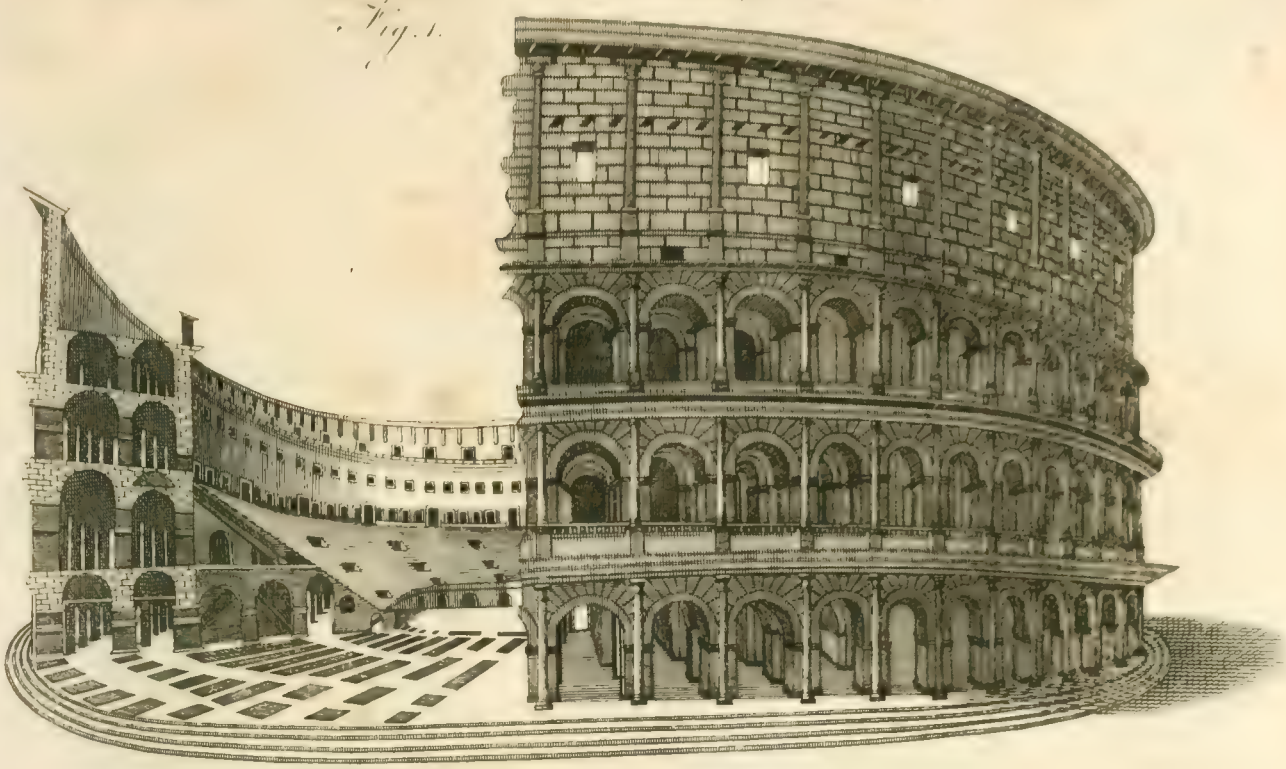
AMPLITUDE, in *Aſtronomy*, an arch of the horizon intercepted between the eaſt or weſt point and the centre of the ſun, or a planet, at its riſing or ſetting; and ſo is either north and ſouth, or ortive and occaſive.

Magnetical AMPLITUDE, the different riſing or ſetting of the ſun from the eaſt or weſt points of the compaſs. It is found by obſerving the ſun, at his riſing and ſetting, by an amplitude compaſs.

AMPSAGA, a river of ancient Numidia. See ALGIERS.

Vespasian's Amphitheatre which contained eighty seven thousand spectators.

Fig. 1.



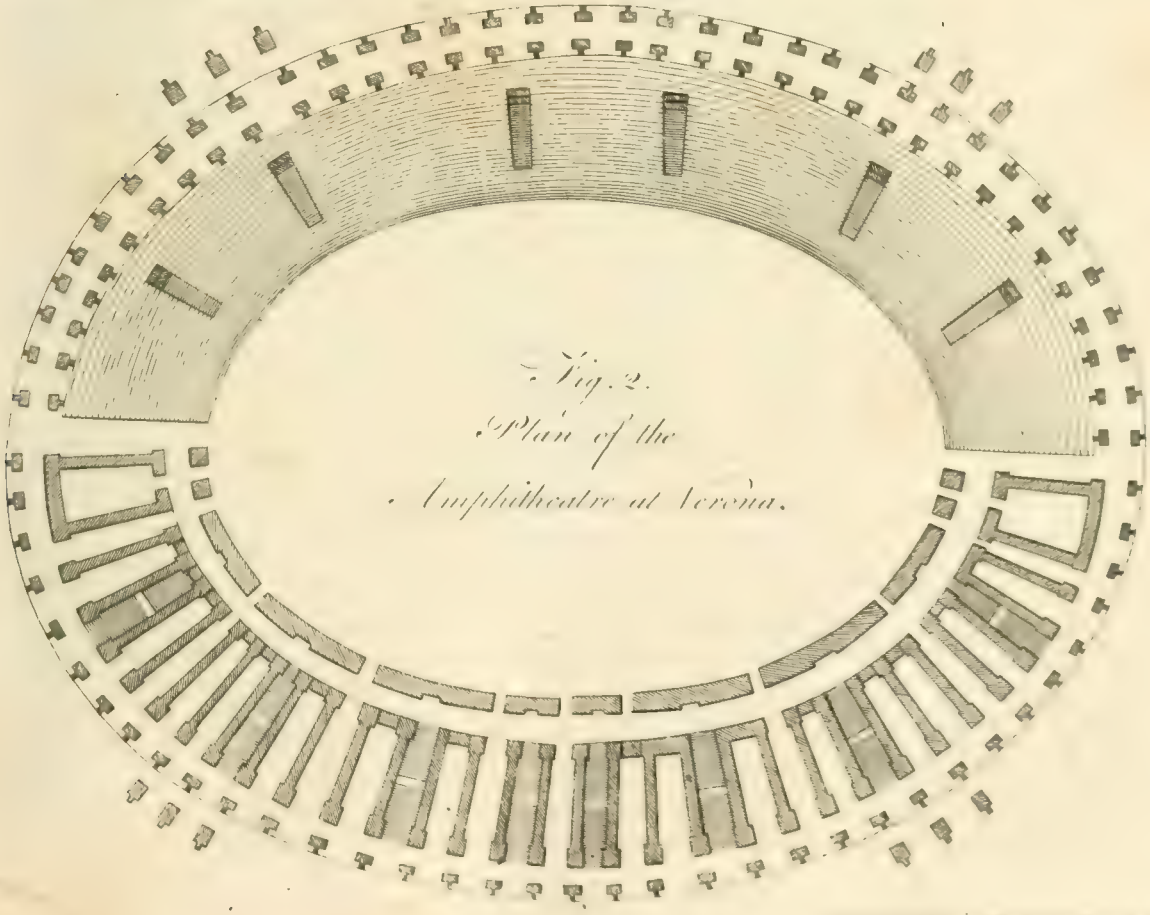


Fig. 2.
Plan of the
Amphitheatre at Verona.

Ampſancti ‖ Amraphel.

AMPSANCTI VALLIS, or AMPSANCTI LACUS, a cave or lake in the heart of the Hirpini, or Principato Ultra, near the city Tricento (Cicero, Virgil, Pliny); it is now called *Moffeta*, from Mephitis, the goddeſs of ſtench, who had a temple there. The ancient poets imagined that this gulf led to hell. The Moffeta is thus deſcribed by Mr Swinburne: "We were led into a narrow valley, extending a conſiderable way to the ſouth-weſt, and preſſed in on both ſides by high ridges thickly covered with copſes of oak. The bottom of the dell is bare and arid: in the loweſt part, and cloſe under one of the hills, is an oval pond of muddy aſh-coloured water, not above 50 feet in diameter: it boils up in ſeveral places with great force in irregular fits, which are always preceded by a hiſſing ſound. The water was ſeveral times ſpouted up as high as our heads in a diagonal direction, a whirlpool being formed round the tube, like a baſon, to receive it as it fell. A large body of vapour is continually thrown out with a loud rumbling noiſe. The ſtones on the riſing ground that hangs over the pool are quite yellow, being ſtained with the fumes of ſulphur and ſal ammoniac. A moſt nauſeous ſmell riſing with the ſteam obliged us to watch the wind, and keep clear of it, to avoid ſuffocation. The water is quite inſipid both as to taſte and ſmell; the clay at the edges is white, and carried into Puglia to rub upon ſcabby ſheep, on which account the lake is farmed out at 100 ducats a-year. On a hill above this lake ſtood formerly a temple dedicated to the goddeſs Mephitis: but I perceived no remains of it."

AMPULLA, in antiquity, a round big-bellied veſſel which the ancients uſed in their baths, to contain oil for anointing their bodies; alſo the name of a cup for drinking out of at table.

AMPULLA, among eccleſiaſtical writers, denotes one of the ſacred veſſels uſed at the altars. Ampullæ were alſo uſed for holding the oil uſed in chriſmation, conſecration, coronation, &c. Among the ornaments of churches we find frequent mention made of ampuls or vials. In the inventory of the cathedral of Lincoln we meet with ampuls of cryſtal, variouſly enriched with ſilver feet and covers; one containing a tooth of St Chriſtopher, another a tooth of St Cecily, another a bone of the head of St John Baptiſt.

Knights of St AMPULLA, belong to an order inſtituted by Clovis I. king of France; at the coronation they bear up the canopy under which the ampulla is carried in proceſſion.

AMPURA, a province of the kingdom of Peru, before its conqueſt by the Spaniards. Here the inhabitants worſhipped two lofty mountains from a principle of gratitude, becauſe of the deſcent of the water from them by which their lands were fertilized. It is ſaid to have been conquered by Viracocha the eighth inca.

AMPURIAS, the capital of the territory of Ampurdan, in Catalonia, ſeated at the mouth of the river Fluvia, in E. Long. 2. 56. N. Lat. 42. 5. The land about it is barren, full of briars and bulruſhes, except in ſome places, which produce flax.

AMPUTATION, in *Surgery*, the cutting off a limb, or any part, from the body. See SURGERY *Index*.

AMRAPHEL, the king of Shinar, or Babylonia, confederated with Chedorlaomer, king of the Elamites, and two other kings, to make war againſt the kings of Pentapolis; that is to ſay, of Sodom, Gomorrah, and the three neighbouring cities. The kings who were in league with Amraphel worſted thoſe of Pentapolis, plundered their city, and carried off abundance of captives, among whom was Lot, Abraham's nephew. But Abraham purſued them, retook Lot, and recovered all the ſpoil. See ABRAHAM.

Amras, Amraphel.

AMRAS, a ſtrong caſtle of Germany, ſeated in Tirol; by ſome German writers called *Arx Ambroſiana*, which was a houſe of pleaſure for the archdukes to retire to in the heat of the ſummer. By others this fort is called *Ombraſi*; a name derived from the deſign of it, which was to be a ſhady ſummer-houſe. It is moſt delightfully ſituated at the foot of a mountain, but has no great external beauty. All the furniture of ordinary uſe has been carried away; yet it is ſtill remarkable for its galleries, which contain a very large collection of antiquities, and both natural and artificial curioſities. It excels all others in its curious collection of armour and coats of mail, many of which belonged to very great men. There is alſo a great collection of gold medals, which weigh, as they affirm, about 16 pounds; there are alſo 3000 cameos and intaglios, but few of them very fine. A great part of theſe antiquities were ſent to this place by Charles V. On the walls and ceiling there are ſome very good paintings; and, among the reſt, they have an admirable picture of Noah's ark, done by Baſſano, for which the grand duke of Tuſcany is ſaid to have offered 100,000 crowns. They have a library, which is not in very good order; and a gallery full of buſts and other pieces of antiquity, beſides many other apartments adorned with pictures of great value. E. Long. 11. 40. N. Lat. 47. 0.

AMRU-EBN-AL-AS, one of the moſt famous of the firſt race of Saracen leaders, was deſcended of Aaſi, of the tribe of Koreiſh, by a notorious proſtitute. In his youth he indulged in poetry, and wrote ſatirical verſes againſt the perſon and doctrine of Mahomet. His zeal in oppoſing the new religion prompted him to undertake an embaſſy to the king of Ethiopia, to ſtimulate him againſt the converts whom he had taken under his protection. It is uncertain by what arguments he was induced to change his religious ſentiments; but he returned a convert to the Mahometan faith, and, along with Caled, joined the fugitive prophet at Medina. The military talents of Amru had begun to attract general attention when Abubeker reſolved to make a new attack upon Syria, in which he obtained the chief command. After ſeveral diſplays of his military valour and addreſs in ſome ſucceſsful enterpriſes, he roſe to the elevated ſtation of chief in Irak, when Caled requeſted the attendance of all the Arabian generals before Damaſcus. During the caliphate of Omar, he alſo ſerved in Paleſtine, under Abu Obeidah. While beſieging Cæſarea, he held a memorable conference with Conſtantine, the ſon of the emperor Heraclius. Hiſtorians mention that their time was chiefly occupied in producing genealogical arguments to prove the affinity of the Greeks and Arabians, and the conſequent rights of the latter as their deſcendants. Amru concluded with the candid declaration, "That the Arabians were tired of living

Amru-ebn-al-as.

in their ſcorching deſerts, and were reſolved to re-enter into the poſſeſſion of the delightful country which was the inheritance of their forefathers." He withdrew from the conference, after denouncing perpetual enmity againſt the Greeks, unleſs they ſhould either become converts to the Mahometan faith or tributaries to that government. In the year of the Hegira 17, A. D. 638, Amru took Cæſarea, and reduced to ſubjection all the maritime towns of Syria.

After the death of Obeidah, Amru aſſumed the chief command in Syria, in which he was confirmed by the caliph, notwithſtanding the oppoſition of Othman. An expedition againſt Egypt being formerly reſolved upon, Amru wrote to the caliph, informing him that he would inſtantly march into Egypt. During the progreſs of his march, attended only by 4000 Arabs, a meſſenger from Omar arrived with a letter, containing directions to return, if he ſhould receive this letter in the territories of Syria; but if he ſhould receive it in thoſe of Egypt, he might advance, and all needful aſſiſtance would be inſtantly ſent him. Anticipating the contents, he haſtened on to the frontiers of Egypt, and there collecting his principal officers, he opened and read the inſtructions of the caliph. Then requeſting ſome of the inhabitants to be brought before them, and inquiring at them in what country they were, and being informed that they were in Egypt, Amru replied, "Let us, then, continue our march." Having taken Pharma, he advanced to Miſrah, the ancient Memphis, and beſieged it during the ſpace of ſeven months. Although numerous reinforcements arrived, he would have found it very difficult to ſtorm the place previous to the inundation of the Nile, if Mokawkas had not treacherouſly leſſened the forces of the citadel, which was accordingly taken by ſtorm; and the Greeks who remained there were either made priſoners or put to the ſword. On the ſame ſpot Amru erected a city named Foſtat, the ruins of which are now known by the name of Old Cairo. The Coptic Chriſtians, who compoſed the great majority of the Egyptian natives, and who were enemies to the Catholic Greeks, after this victory ſubmitted to Amru, and engaged to provide quarters and ſupport for the Muſſulman army.

Amru purſued the Greeks to Alexandria, and, after an obſtinate and bloody ſiege of 14 months, the city was taken, A. D. 640. During the ſiege, the general, along with one of his officers and a ſlave, was taken priſoner, and brought before the governor, who was at that time ignorant of the value of his priſoner. The manner, however, in which the general at firſt conducted himſelf induced the governor to ſuppoſe that he was a perſon of rank, therefore he ordered him to be beheaded. This order would have immediately been carried into effect, had not the ſlave, who underſtood the Greek tongue, in which the command was given, fortunately chaſtiſed the imprudent language of Amru by giving him a box on the ear. This circumſtance changed the mind of the governor, and obtained a repeal of his order. By an engagement to propoſe an accommodation, the captive officer obtained the releaſe of all the three; and the acclamations of the army on the return of their general firſt informed the governor of his egregious miſtake. Amru prevailed upon his ſoldiers to refrain from the pillage of Alexandria, and to content themſelves with the preſervation of the money, jewels, and other valuable articles, to defray the expence of the war. Amru was diſpoſed to preſerve the famous library, and to have given it in a preſent to John the grammarian, but, by the command of the caliph, he was obliged to commit it to the flames. If the relation is not exaggerated, ſuch was the number of books in that famous library, that they afforded fuel to 5000 baths during the ſpace of ſix months.

Amru-ebn-al-as.

The capital being taken, all Egypt ſoon fell into the hands of the conqueror. Amru obſerved a wiſe and equitable policy, although his pecuniary demands were great. Egypt became the ſtorehouſe to famiſhing Arabia, and camels carrying proviſions covered the whole road from Memphis to Medina. Amru alſo employed his army in opening the canal from the Nile to the Red ſea. The adjacent parts of Africa next felt the conquering power of Amru, but, upon the elevation of Othman, he was ſucceeded in the government of Egypt by Abdallah-ebn-Said. The inhabitants were ſo diſpleaſed with this change, that they formed a confederacy, and delivered up the city to a Grecian fleet. Amru was deſpatched in haſte to retake Alexandria, which, after an obſtinate defence, was taken with great ſlaughter. The general at length interpoſing his authority, the ſlaughter was ſtopped, and upon the ſpot where the maſſacre ceaſed the *Moſque of Mercy* was erected. To prevent future rebellion, he diſmantled the town, and was again ſucceeded by Abdallah; and he himſelf retired to Medina.

When Ali aſcended the throne, he became an adverſary, and united himſelf to the intereſt of Moawiyah, whom he acknowledged caliph, and ſwore allegiance to him. Ali propoſed to decide the quarrel by ſingle combat, and the valour of Amru inclined him to urge his maſter to accept of the propoſal; but Moawiyah poſitively declined the challenge. Amru, however, continued firm to the intereſt of Moawiyah, and took poſſeſſion of Egypt in his name, having defeated the governor of Ali. About this time, he fortunately eſcaped aſſaſſination by the hands of the frantic Charegites, who had marked him out as one of the three who, by their death, was to reſtore peace to the contending parties. The aſſaſſin waited his arrival at the moſque, but being prevented by a fit of the colic, his friend who was ſent to officiate for him was ſlain in his ſtead.

In the year 663, of the Hegira 43, he died in his government of Egypt, highly eſteemed, and much regretted by his countrymen. In a pathetic oration to his children on his deathbed, he bitterly lamented his youthful offence in ſatirizing the prophet, although Mahomet had forgiven the offence, and had frequently affirmed "that there was no Muſſulman more ſincere and ſtedfaſt in the faith than Amru." It is reported, that one day the caliph deſired to ſee the ſword of Amru, which had cut in pieces ſo many Chriſtians. Amru drew his ſword, which was a ſhort and common ſcymitar; and when Omar manifeſted ſigns of unuſual ſurpriſe, he exclaimed, "Alas! the ſword itſelf, without the arm of its maſter, is neither ſharper nor more weighty than the ſword of Pharezdak the poet." The greatneſs of the man, the firmneſs of the friend, the valour of the general, the policy of the ſtateſman, and

Amſancti || Amſterdam.

the ſanctity of the Mahometan moraliſt, were united in the character of Amru. (*Mod. Univ. Hiſt. Gen. Biog.*)

AMSANCTI. See AMPSANCTI.

AMSBURY, or AMBERSBURY. See AMBRESBURY.

AMSDORFIANS, in church hiſtory, a ſect of Proteſtants in the 16th century, who took their name from Amſdorf their leader. They maintained, that good works were not only unprofitable, but were obſtacles to ſalvation.

AMSTERDAM, the capital city of the province of Holland and of the United Netherlands, is ſeated on the river Amſtel and an arm of the ſea called the *Wye*. The air is but indifferent, on account of the marſhes that ſurround it, and render the city almoſt inacceſſible: but this inconvenience is abundantly recompenſed by the utility of its commerce, which the port ſerves greatly to promote; for it will contain above 1000 large ſhips.

In 1204, it was nothing but a ſmall caſtle, called *Amſtel* from the name of the river, which its lords made a retreat for fiſhermen, who at firſt lived in huts covered with thatch: but it ſoon became conſiderable, and had a bridge and towers built upon it, inſomuch that it roſe to a ſmall city; though, till the year 1490, it was ſurrounded with nothing but a weak palliſado. The walls were then built with brick, to defend it from the incurſions of the inhabitants of Utrecht, with whom the Hollanders were often quarrelling; but ſome months afterwards it was almoſt reduced to aſhes. In 1512, it was beſieged by the people of Guelderland; who not being able to take it, ſet fire to the ſhips in the harbour. In 1525, an Anabaptiſt leader, with 600 of his followers, got into the city in the night-time, attacked the townhouſe, and defeated thoſe that made any reſiſtance. At length they barricaded, with wool and hop ſacks, the avenues to the market place, where theſe enthuſiaſts were poſted; and ſo put a ſtop to their fury till day appeared, at which time the citizens fell upon them on all ſides, and forced them to retire into the townhouſe, where moſt of them were cut to pieces. About ten years after, there was another tumult raiſed by a parcel of fanaticks, conſiſting of men and women, who ran about the ſtreets ſtark naked, and had a deſign of making themſelves maſters of the townhouſe. Their ſhrieks and cries, which were dreadful enough, ſoon alarmed the inhabitants, who ſeized the greateſt part of them, and gave them the chaſtiſement they deſerved.

Amſterdam was one of the laſt cities that embraced the reformed religion. It was beſieged by the Hollanders in 1578, and ſubmitted after a ſiege of ten months. One article of the capitulation was, a free exerciſe of the Roman Catholic religion: but this was not obſerved by the Proteſtants; for they ſoon drove the eccleſiaſtics, monks, and nuns, out of the city, broke the images, and demoliſhed the altars. From this time it became the general rendezvous of all nations and of every ſect, which raiſed it to that degree of grandeur and opulence it now enjoys. The inhabitants were often obliged to enlarge the bounds of their city, and in 1675 it was increaſed to its preſent extent. It was ſurrounded with a brick wall, and a large ditch 80 feet broad full of running water. The walls were fortified with 26 baſtions, on each of which there is now a windmill. There are eight gates towards the land, and one towards the water. Amſterdam.

Amſterdam being ſeated on a marſhy ſoil, is built on piles of wood; for which reaſon no coaches are allowed, except to great men and phyſicians, who pay a tax for that privilege; and all kinds of goods are drawn on ſledges. It ſtands ſo low, that they would be expoſed to inundations, if they did not ſecure themſelves by dykes and ſluices. The fineſt ſtreets are, the Keyſar's Graft, or Emperor's Canal; the Heer Graft, or Lords Canal; the Cingel; and the ſtreet of Haerlem. The principal canal is remarkable for its houſes, which are magnificent ſtructures of an equal height. Here are three prodigious ſluices, and a great number of canals which croſs the city in many parts, and render the ſtreets clean and pleaſant. The canals are deep, their ſides are lined with hewn ſtone, they have generally rows of trees planted on each ſide, and many ſtone bridges over different parts of them.

The fineſt is that called the *Amarrack*, which is formed by the waters of the Amſtel, into which the tide comes up, and on the ſides of which are two large quays. This canal has ſeveral bridges. The principal is that next the ſea, called *Pont Neuf*, or the *New Bridge*: it is 600 feet long, and 70 broad, with iron balluſtrades on each ſide; it has 36 arches, of which 11 are very high, and eight are ſhut up to encloſe the yachts. From this bridge there is a moſt charming proſpect of the city, port, and ſea. The port is a mile and a half in length, and above 1000 paces in breadth. It is always filled with a multitude of veſſels, which look like a foreſt, or rather a floating city. The ſtreets in general are well paved, and the houſes built of brick or ſtone. Towards the ſides of the haven, the city is encloſed with great poles driven into the ground, which are joined by large beams placed horizontally. There are openings to let the ſhips in and out, which are ſhut every night at the ringing of a bell.

Amſterdam is computed to be half as big as London, including the fortifications, and almoſt as populous in proportion. There are people here of almoſt every nation and religion in Europe, who are all tolerated in their reſpective perſuaſions; but none admitted to any ſhare in the government except the Calviniſts. There are 11 churches for the Dutch of the eſtabliſhed or Calviniſtical religion, with two French and one High Dutch. The Engliſh have alſo three churches in this city: one for the Preſbyterians, whoſe miniſters are paid by the magiſtrates; a ſecond for thoſe of the church of England, whoſe miniſter is paid by his Britannic majeſty; and a third for the Browniſts, who maintain their own miniſters. None but the Calviniſts are allowed to have bells, and their miniſters are maintained by the magiſtrates. All theſe churches or congregations make up only a third part of the inhabitants of the city. The Roman Catholics, who have 27 houſes or chapels for their worſhip, form another third part. Here they have a long ſquare of houſes for their begunes (a kind of nuns) to live in; who are not ſhut up in cloiſters as other nuns in Roman Catholic countries, but have liberty to walk abroad, and may even marry when they are tired of this kind of life. Theſe chapels of the Roman Catholics have no bells allowed

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lowed them, being looked upon as conventicles, and may be ſhut up and opened according as the government pleaſes. The other third part of the city is made up of Jews, Lutherans, Arminians, Anabaptiſts, &c. none of whom, as was ſaid of the Roman Catholics, are allowed to have bells in their churches. Thoſe who marry, and are not of the eſtabliſhed religion, are obliged to be joined firſt by the magiſtrates, and then they may perform the ceremony in their own aſſemblies. The Jews, who are very conſiderable in this place, have two ſynagogues; one of which, namely the Portugueſe, is the largeſt in Europe. Within the court yard, where their ſynagogue ſtands, they have ſeveral rooms or ſchools, where their children are taught Hebrew, and very carefully inſtructed in the Jewiſh religion.

The moſt remarkable of the religious buildings is the New Church, dedicated to St Catharine. It was begun in the year 1408, others ſay 1414; and was 100 years in building. It had the misfortune of being burnt in the year 1645, but was in a ſhort time after built in a more magnificent manner. The foundation of a ſteeple is laid before this church, which was deſigned to be very high. The piles on which it was to be erected are not above 100 feet ſquare, and yet they are 6334 in number, and thoſe very large. Nevertheleſs it was thought that theſe vaſt piles, or rather the ground, were not able to ſupport the prodigious weight they intended to lay upon it; for which reaſon the ſteeple remains unfiniſhed. The pulpit is a maſterpiece of the kind, where the four evangeliſts and many other curious pieces of ſculpture are repreſented. The glaſs windows are adorned with paintings, among which the emperor Maximilian is deſcribed, preſenting an imperial crown to the burgomaſters of Amſterdam for the creſt of the arms of this city. The organ is very large, and reckoned one of the beſt in the world. It has a ſet of pipes that counterfeit a chorus of voices, and has 52 whole ſtops beſides half ſtops, with two rows of keys for the feet, and three rows of keys for the hands. Thoſe who hear it play for the firſt time imagine they hear a human voice. The grate dividing the chancel from the body of the church is all of Corinthian braſs. The branches of candleſticks are the richeſt in the Seven Provinces. There is a very fine marble monument erected to Admiral Ruyter, who was killed at Meſſina.

The public buildings of a civil nature are very magnificent. The ſtadthouſe was founded in 1648. It is built upon 14,000 wooden piles; and its front is 282 feet long, its ſides 255 feet, and its height to the roof 116. There is a marble pediment in the front, whereon a woman is carved in relievo, holding the arms of the city; ſhe is ſeated in a chair, ſupported by two lions, with an olive branch in her right hand; on each ſide are four Naiads who preſent her with a crown of palm and laurel, and two other marine goddeſſes preſent her with different ſorts of fruit; beſides, there is Neptune with his trident, accompanied with Tritons, a ſea-unicorn, and a ſea-horſe. On the top ſtand three ſtatues in bronze, repreſenting Juſtice, Strength, and Plenty. On the top of the ſtructure is a round tower, 50 feet above the roof, adorned with ſtatues, and an harmonious chime of bells, the biggeſt of which weighs about 7000 pounds, and the next 6000. They are made to play different tunes every month. It has not one handſome gate, but only ſeven doors to anſwer to the number of the United Provinces. On the floor of the great hall are two globes, the celeſtial and terreſtrial, which are 22 feet in diameter and 69 in circumference. They are made of black and white marble, and are inlaid with jaſper and copper. In general, all the chambers are enriched with paintings, carvings, and gildings. While this ſtadthouſe was building, the old one was ſet on fire, and conſumed with all the archives and regiſters.

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Under the ſtadthouſe is a prodigious vault, wherein is kept the bank of Amſterdam, where there is a vaſt quantity of ingots both of gold and ſilver, as alſo bags which are ſuppoſed to be full of money. The doors are proof againſt petards, and are never opened but in the preſence of one of the burgomaſters. The priſons for debtors and criminals are likewiſe under the ſtadthouſe; as alſo the guard-room for the citizens, wherein the keys of the city are locked every night. At the end of the great hall is the ſchepens or aldermen's chamber, where civil cauſes are tried. Beſides theſe, there are the chambers of the ſenate and council, the burgomaſters chamber, the chambers of accounts, &c. In the ſecond ſtory is a large magazine of arms; and on the top of the building are ſix large ciſterns of water, which may be conveyed to any room in the houſe in caſe of fire; to prevent which the chimneys are lined with copper.

The bourſe, or exchange, where the merchants aſſemble, is all of free-ſtone, and built upon 2000 wooden piles. Its length is about 250 feet, and its breadth 140. The galleries are ſupported by 26 marble columns, upon each of which are the names of the people that are to meet there. They are all numbered; and there is a place fixed for every merchandiſe under ſome one of theſe numbers. On the right hand of the gate is a ſuperb ſtaircaſe which leads to the galleries; on one ſide of which there are ſeveral ſhops, and on the other a place to ſell clothes. It is not unlike the royal exchange in London.

The admiralty office is in a houſe which belonged formerly to the princes of Orange. The arſenal for their men of war is in the harbour. This is a very handſome building, 200 feet long and 22 broad. The ground floor is filled with bullets; the ſecond floor contains the arms and cordage; the third their ſails, pulleys, flags, &c. This arſenal contains a great many curioſities; among the reſt an Indian canoe brought from the ſtraits of Davis, and a conſervatory of water on the top of the houſe that holds 1600 tuns of water, which may be diſtributed in caſe of fire into 16 different parts by leaden pipes. Hard by this edifice you ſee the dock or yard where they build their men of war. This dock is 508 feet long, and contiguous to it are houſes for lodging the ſhip carpenters. The dock is plentifully ſupplied with every thing neceſſary for the conſtruction of ſhips.

The Eaſt India Company occupy a large building divided into ſeveral offices or apartments. In ſome of thoſe they have great ſtores of packed goods, and likewiſe a room with all ſorts of drugs, tea, wax, ambergris, and muſk. Here they have a magazine full of medicaments for ſurgeons cheſts, to furniſh the Company's ſhips and garriſons in the Indies; as alſo

Amſterdam. large magazines of nutmegs, cloves, mace, and cinnamon. In the court-yard there is a guard chamber, where every night the houſekeeper has a watch; and on the other ſide of the gate there is a chemiſt, who with his men prepares medicines for the Indies; and adjoining to this court-yard is their warehouſe and packhouſe for pepper and groſs goods. In the new part of this city they have a magazine or palace, which may properly be called an *arſenal*. The ground on which this building ſtands is 2000 feet, and ſquare every way, reckoning the moats or burgwall about it. The two rope-alleys are 1800 feet long, on the back-ſide of which is a ſtore of 500 large anchors beſides ſmall ones. In this arſenal they build the ſhips belonging to the Indian chamber of Amſterdam; for which reaſon they have all ſorts of workhouſes here for the artificers that ſerve the Company.

The academy called the *Illuſtrious School*, is likewiſe a very fine building. It was formerly a convent belonging to the nuns of St Agnes. Here they teach Latin, the oriental languages, theology, philoſophy, hiſtory, &c. The lawyers and phyſicians have likewiſe their ſchools.

Beſides theſe, there are ſeveral hoſpitals, or houſes for orphans, for poor widows, for ſick perſons, and for mad people; all which are regulated with much prudence. The Raſp-houſe, which was formerly a nunnery, is now a ſort of workhouſe for men that behave ill. They are commonly ſet to ſaw or raſp Braſil wood; and if they will not perform their taſk, they are put into a cellar which the water runs into, where if they do not almoſt conſtantly ply the pump, they run the riſk of being drowned. There is likewiſe a ſpin-houſe for debauched women, where they are obliged to ſpin wool, flax, and hemp, and do other work. All the hoſpitals are extremely neat, and richly adorned with pictures. They are maintained partly by voluntary contributions, which are raiſed by putting money into the poor's boxes fixed up all over the city; and partly by taxing all public diverſions, as well at fairs as elſewhere. Likewiſe every perſon that paſſes through any of the gates at candle-light pays a penny for the ſame uſe. The charities are taken care of by certain officers called *deacons*. The governors are nominated by the magiſtrates out of the moſt conſiderable men in the city.

The common ſort have places of diverſion called *Spiel-houſes*, where there are muſic and dancing. They are much of the ſame kind as the hops which were ſo frequent about London. If ſtrangers go there, they muſt take care not to make their addreſſes to a woman that is engaged to any other man.

There are two ſuburbs to this city; one at the gate of the regulars; and the other goes as far as Overtoon a village a little way from Amſterdam, where boats which come from Leyden are rolled over land upon wooden rollers. There is likewiſe in this city an hoſpital for thoſe that are infected with the plague; which was built in the year 1630, and has 360 windows.

This city is governed by a ſenate or council, which conſiſts of 36 perſons, called a *Vroedſhap*, who enjoy their places for life; and when any of them dies, the remainder chooſe another in his ſtead. This ſenate elects deputies to be ſent to the States of Holland, and appoints the chief magiſtrates of the city called *Burgomaſters* or *Echevins*, who are like our aldermen. The number is twelve; out of which four are choſen every year to execute the office, and are called *Burgomaſters regent*. Three of theſe are diſcharged every year, to make room for three others. One of the four is kept in to inform the new ones of the ſtate of affairs, and alſo preſides the three laſt months in the year, and the others three months each; ſo that when they are in this office, they may be compared to the lord mayor of the city of London. Their alterations and appointments are made by their own body. They chooſe all inferior officers which become vacant during their regency. They have likewiſe the direction of all public works, which regard the ſafety, tranquility, and embelliſhment of this city. The keys of the famous bank of this city are in the hands of theſe magiſtrates. Amſterdam.

The college conſiſts of nine burgomaſters or echevins, who are judges in all criminal affairs, without appeal; but in civil cauſes they may appeal to the council of the province. There are two treaſurers, a bailiff, and a penſionary. The bailiff continues in his office three years; and ſearches after criminals, takes care to proſecute them, and ſees their ſentence executed. The penſionary is the miniſter of the magiſtracy, is well verſed in the laws, makes public harangues, and is the defender of the intereſts of the city. The city of Amſterdam contributes to the public income above 50,000 livres per day, beſides the exciſe of beer, fleſh, and corn; which in all amounts to above 1,600,000l. a-year. This is more than is paid by all the reſt of the provinces put together; and yet Amſterdam bears but the fifth rank in the aſſembly of the ſtates of Holland, with this diſtinction, that, whereas other cities ſend two members, this ſends four.

The militia of Amſterdam is very conſiderable. They have 60 companies, each of which has from 200 to 300 men. Jews and Anabaptiſts are excluded from this ſervice, not being admitted to bear arms: But they are obliged to contribute to the maintenance of the city-guard, which conſiſts of 1400 ſoldiers; as alſo to the night-watch, who patrol about the ſtreets and proclaim the hour. Beſides theſe, there are trumpeters on every church ſteeple, who ſound every half hour; and if there happens a fire, they ring the fire-bell, and ſhow where it is. The inhabitants have excellent contrivances to extinguiſh it ſpeedily.

The trade of Amſterdam is prodigious: for almoſt the whole trade of the Eaſt India Company centres in this city, which beſides carries on a commerce with all the reſt of the world, inſomuch that it may be called the magazine or ſtorehouſe of Europe. They import a vaſt deal of corn from the Baltic, not ſo much for preſent conſumption, as to lay up againſt times of ſcarcity. The richeſt ſpices are entirely in the hands of the Eaſt India Company, who furniſh all Europe therewith. They have vaſt quantities of military ſtores, with which they ſupply ſeveral nations; which is owing to their engroſſing moſt of the iron-works on the Rhine and other great rivers that run into Holland. Such was the ſtate of Amſterdam before the late revolution. Since that period, it has probably undergone conſiderable changes, as well in its internal government, as in its foreign connexions. The longitude of Amſterdam is 4. 30. E.; the latitude, 52. 25. N.

AMSTERDAM, or *Tongataboo*, is alſo the name of an iſland

Amſterdam. iſland in the South ſea, ſaid to have been diſcovered by Taſman a Dutch navigator. It was alſo viſited by Captain Cook. Its greateſt extent from eaſt to weſt is about 21 miles, and from north to ſouth about 13. It is broad at the eaſt end, and runs taper towards the weſt, where it turns, and runs to a point due north. It is about ſix leagues to the weſt of Middleburgh. The ſhore is ſurrounded by a coral rock, and its moſt elevated parts are not above ſix or eight yards above the level of the ſea. S. Lat. 21. 11. W. Long. 175. It is wholly laid out in plantations, in which are cultivated ſome of the richeſt productions of nature.

Here are bread-fruit, cocoa-nut trees, plantains, bananas, ſhaddocks, yams, and ſome other roots, ſugar-canes, and a fruit like a nectarine called by the natives *fighega*. There did not appear an inch of waſte ground: the roads occupied no more ſpace than was abſolutely neceſſary: the fences did not take up above four inches each; and even theſe were not wholly loſt, for in many grew ſome uſeful trees or plants; it was everywhere the ſame, change of place altered not the ſcene: nature, aſſiſted by a little art nowhere appeared with more ſplendour than on this iſland. Water is not ſo plentiful here as at the Society iſlands, but the chief pointed out a pool of freſh water unaſked; to ſupply the ſhips with that neceſſary article. Caſuarinas, pandangs, and wild ſago palms, appear here with their various tints of green, and barringtoniæ as big as the loftieſt oaks. The bread-fruit does not, however, thrive here with the ſame luxuriance as at the Society iſlands; the coral rock, which compoſes the baſis of this ſpot, being much more thinly covered with mould.

Both men and women are of the common ſize of Europeans, and their colour is that of a lightiſh copper; they are well-ſhaped, have regular features, are active, briſk, and lively. They have fine eyes, and in general good teeth, even to an advanced age. The women are the merrieſt creatures imaginable, and inceſſant talkers. In general, they appear to be modeſt; although there was no want of thoſe of a different ſtamp. Among the natives, who ſwam about the ſhip very vociferouſly, were a conſiderable number of women, who wantoned in the water like amphibious creatures, and were eaſily perſuaded to come on board perfectly naked; but none of them ventured to ſtay there after ſunſet, but returned to the ſhore to paſs the night, like the greater part of the inhabitants, under the ſhade of the wild wood which lined the coaſt. There they lighted great fires, and were heard converſing almoſt the whole night. Their hair of both ſexes in general is black, but eſpecially that of the women; both ſexes wear it ſhort, except a ſingle lock on the top of the head, and a ſmall quantity on each ſide. The men cut or ſhave their beards quite cloſe; which operation they perform with two ſhells. The hair of many was obſerved to be burnt at the ends, and ſtrewed with a white powder, which was found, on examining it, to be lime made of ſhells or coral, which had corroded or burnt the hair; ſome made uſe of a blue powder, and others, both men and women, of an orange-coloured powder made of turmeric.

The dreſs of both ſexes conſiſts of a piece of cloth or matting wrapped round the waiſt, and hanging down below the knees. From the waiſt upwards they are generally naked; and it ſeems to be a cuſtom to anoint theſe parts every morning. The practice of tattowing, or puncturing the ſkin, likewiſe prevails. The men are tattowed from the middle of the thigh to above the hips; the women have it only on their arms and fingers, and on thoſe parts but very ſlightly. Their ornaments are amulets, necklaces, and bracelets, the bone, ſhells, and beads of mother-of-pearl, tortoiſe-ſhell, &c. which are worn by men as well as women. The women alſo wear on their fingers neat rings made of tortoiſe-ſhell, and pieces in their ears about the ſize of a ſmall quill: but here ornaments are not commonly worn, though all have their ears pierced. They have alſo a curious apron, made of the cocoa-nut ſhell; and compoſed of a number of ſmall pieces ſewed together in ſuch a manner as to form ſtars, half-moons, little ſquares, &c.; it is ſtudded with beads and ſhells, and covered with red feathers, ſo as to have a pleaſing effect. They make the ſame kind of cloth, and of the ſame materials, as at Otaheite, though they have not ſuch a variety, nor do they make any ſo fine; but as they have a method of glazing it, it is more durable, and will reſiſt rain for ſome time, which the other cloth would not. Their colours are black, brown, yellow, purple, and red; all made from vegetables. They make various ſorts of matting, ſome of a very fine texture, which is generally uſed for clothing; and the thick and ſtronger ſort ſerves to ſleep upon, and to make ſails for their canoes, &c. Among other uſeful utenſils, they have various ſorts of baſkets, ſome made of the ſame materials as their mats, and others of the twiſted fibres of cocoa-nuts. Theſe are not only durable, but beautiful, being generally compoſed of different colours, and ſtudded with beads made of ſhells or bones. They have many little nick-nacks among them, which ſhow that they neither want taſte to deſign, nor ſkill to execute, whatever they take in hand. Their fiſhing implements are much the ſame as in the other iſlands: here was purchaſed a fiſh-net made like our caſting nets, knit of very firm though ſlender threads. Amſterdam, Amuet.

Notwithſtanding their friendly diſpoſition, theſe people have very formidable weapons; ſome of their ſpears have many barbs, and muſt be very dangerous weapons when they take effect. A large flat ſhell or breaſt-plate was purchaſed, made of a roundiſh bone, white and poliſhed like ivory, about 18 inches in diameter, which appeared to have belonged to an animal of the whale tribe.

AMULET, a charm, or preſervative againſt miſchief, witchcraft, or diſeaſes.

Amulets were made of ſtone, metal, ſimples, animals, and in a word of every thing that imagination ſuggeſted.

Sometimes they conſiſted of words, characters, and ſentences, ranged in a particular order, and engraved upon wood, &c. and worn about the neck, or ſome other part of the body. See ABRACADABRA.

At other times they were neither written nor engraved; but prepared with many ſuperſtitious ceremonies, great regard being uſually paid to the influence of the ſtars. The Arabians have given to this ſpecies of amulet the name of TALISMAN.

All nations have been fond of amulets: the Jews were extremely ſuperſtitious in the uſe of them, to drive

Amulet, Amurath.

drive away diſeaſes: and the Miſhna forbids them, unleſs received from an approved man who had cured at leaſt three perſons before by the ſame means.

Among the Chriſtians of the early times, amulets were made of the wood of the croſs, or ribbands with a text of Scripture written in them, as preſervatives againſt diſeaſes. Notwithſtanding the progreſs of learning and refinement, there is not any country in Europe, even at this day, where they do not believe in ſome charm or other. The pope is ſuppoſed to have the virtue of making amulets, which he exerciſes in the conſecrating of *Agnus Dei's*, &c. The ſponge which has wiped his table, was formerly in great veneration as a preſervative from wounds, and from death itſelf: on this account it was ſent with great ſolemnity by Gregory II. to the duke of Aquitain.

Amulets are now much fallen from the repute they were anciently in; yet the great Mr Boyle alleges them as an inſtance of the ingreſs of external effluvia into the habit, in order to ſhow the great poroſity of the human body. He adds, that he is perſuaded ſome of theſe external medicines do anſwer; for that he himſelf, having once been ſubject to bleed at the noſe, and reduced to uſe ſeveral remedies to check it, found the moſs of a dead man's ſkull, though only applied ſo as to touch the ſkin till the moſs was warm thereby, the moſt effectual of any. The ſame Mr Boyle ſhows how the effluvia, even of cold amulets, may, in courſe of time, pervade the pores of a living animal; by ſuppoſing an agreement between the pores of the ſkin and the figure of the corpuſcles. Bellini has attempted to demonſtrate the poſſibility of the thing in his laſt propoſitions *De Febribus;* and the like is done by Dr Wainwright, Dr Keill, &c.

AMURATH, or AMURAT I. the fourth emperor of the Turks, and one of the greateſt princes of the Ottoman empire, ſucceeded Solyman in 1360. He took from the Greeks Gallipoli in Thrace, and Adrianople, which laſt he choſe for the place of his reſidence. He defeated the prince of Bulgaria, conquered Miſnia, chaſtiſed his rebellious baſhaws, and is ſaid to have gained 36 battles. This prince, in order to form a body of devoted troops that might ſerve as the immediate guards of his perſon and dignity, appointed his officers to ſeize annually, as the imperial property, the fifth part of the Chriſtian youth taken in war. Theſe, after being inſtructed in the Mahometan religion, inured to obedience by ſevere diſcipline, and trained to warlike exerciſes, were formed into a body diſtinguiſhed by the name of *Janiſſaries*, or *New Soldiers*. Every ſentiment which enthuſiaſm can inſpire, every mark of diſtinction that the favour of the prince could confer, were employed in order to animate this body with martial ardour, and with a conſciouſneſs of its own pre-eminence. The Janiſſaries ſoon became the chief ſtrength and pride of the Ottoman armies, and were diſtinguiſhed above all the troops whoſe duty it was to attend on the perſon of the ſultan.—At length the death of Lazarus, deſpot of Servia, who had endeavoured in vain to ſtop the progreſs of Amurath's arms, touched Milo, one of his ſervants, in ſo ſenſible a manner, that, in revenge, he ſtabbed the ſultan in the midſt of his troops, and killed him upon the ſpot, A. D. 1389, after he had reigned 23 years.

AMURATH II. the 10th emperor of the Turks, was the eldeſt ſon of Mahomet I. and ſucceeded his father in 1421. He beſieged Conſtantinople and Belgrade without ſucceſs; but he took Theſſalonica from the Venetians, and compelled the prince of Boſnia and John Caſtriot prince of Albania to pay him tribute. He obliged the latter to ſend his three ſons as hoſtages; among whom was George, celebrated in hiſtory by the name of *Scanderbeg*. John Hunniades defeated Amurath's troops, and obliged him to make peace with the Chriſtian princes, in 1442. Theſe princes afterwards breaking the peace, Amurat defeated them in the famous battle of Varna, November 10. 1444, which proved ſo fatal to the Chriſtians, and in which Ladiſlaus king of Hungary was killed. He afterwards defeated Hunniades, and killed above 20,000 of his men; but George Caſtriot, better known by the name of *Scanderbeg*, being re-eſtabliſhed in the eſtates of his father, defeated the Turks ſeveral times, and obliged Amurath to raiſe the ſiege of Croia, the capital of Albania. Amurath died, chagrined with his ill ſucceſs, and infirm with age, February 11. 1451, at Adrianople. It is obſerved to this prince's honour, that he always kept his treaties with the greateſt fidelity.

Amurath.

AMURATH IV. ſurnamed the *Valiant*, was the ſon of Achmet I. and in the year 1622, at the age of 13, ſucceeded his uncle Muſtapha. Bagdad fell into the hands of the Perſians, and ſeveral other diſaſtrous events clouded the commencement of his reign. The pacha of Erzerum had raiſed the ſtandard of rebellion in the former reign; and, continuing his oppoſition, he overran many of the provinces of Leſſer Aſia. But the military talents of the ſultan were ſoon rouſed to exertion; and, making peace with Germany, he haſtened with a formidable army to regain Bagdad. But new rebellions in his Aſiatic dominions, and ſeveral other cauſes, prevented him from recovering the city. The Spahis alſo rebelled at home, and ſeveral viziers were ſlain during the tumults of the Porte.

The natural diſpoſitions of the young monarch were ill adapted to his ſituation, and extremely deſtructive to his people. It is reported, that a flaſh of lightning ruſhing into his chamber during the darkneſs of the night, ſtrongly impaired his reaſon, and produced a violence and intemperance of character which remained to the end of his days. It was therefore nothing more than reaſonable to expect that his policy ſhould be variable and inconſtant; it appears, however, that he actively reſiſted the foes who preſſed upon his dominions from different quarters. The recovery of Bagdad being ſtill his favourite object, in the year 1637, he again marched againſt it; and after 30 days of unremitting aſſault, with the expence of much blood, he took poſſeſſion of the city. By puſhing his men forward to the attack by the point of the ſcimitar, and by ſlaughtering 30,000 Perſians in cold blood after their ſurrender, he diſplayed the brutal ferocity of his diſpoſition. One perſon alone is reported to have moved his obdurate heart on the preſent occaſion. A famous player upon the harp entreated thoſe who were ſent to maſſacre him, to allow him to ſpeak to the ſultan previous to his death. Informed who he was, the ſultan requeſted him to give a ſpecimen of his ſkill in his profeſſion: with this he readily complied, and touched his harp ſo melodiouſly, and

Amurath, Amyclæ.

ſung in ſuch pathetic ſtrains the lamentations on the tragedy of Bagdad, intermixed with the praiſes of Amurath, that the hard heart of the cruel monarch being at length ſoftened, he melted into tears, and ſaved both the muſician and the remaining inhabitants. The loſs ſuſtained by the Perſians at this time, ſo reduced their military ſtrength, that they were unable for a long period to attack the Ottoman empire.

The violence of Amurath ſoon enfeebled his conſtitution; and the fruits of his debaucheries and exceſſes were obvious even in the prime of life. At the age of 31, he fell a victim to an exceſs of revelling in the feaſt of Bairam, in the year 1640. Beholding his end approaching, he is reported to have given orders to aſſaſſinate his brother, in order to ſecure the throne for his favourite Muſtapha; but the affection of his mother prevented the cruel mandate from being carried into effect. The manners and amorous adventures of this monarch have afforded materials for numerous Turkiſh deſcriptions full of extravagance, ſingularity, and cruelty. He ſurpaſſed all his predeceſſors in the abominable vice of intoxication, and even violated the eſtabliſhed laws of the country, by iſſuing an edict permitting the ſale and uſe of wine. But, as if it was not ſufficient to violate the common law, he alſo oppoſed himſelf to the common uſage of the country, by ſhutting up the coffeehouſes, and prohibiting opium and tobacco upon the pain of death. The wanton cruelty of this prince was almoſt unexampled. During his hours of diſſipation, he would ruſh forth into the ſtreets with a drawn ſword in his hand, and cut in pieces all the unhappy perſons who chanced to be in his way. Nay, even in his calmeſt moments, he often diſcharged arrows from his upper windows at the innocent paſſengers as they went along. In ſhort, to ſuch extravagance did his cruelty extend, that the very name of Amurath carried terror along with it, and the opium-chewers fell into fits upon the ſimple mention thereof. The number of perſons that fell victims to his cruelty during a reign of 17 years, amounted to no leſs than 14,000; among whom were many officers of high power and diſtinction in the ſtate. The meanneſs of his diſpoſitions, however, manifeſted themſelves in his deſcending to familiarities with his favourites, and even joining in the meaneſt ſervices. He alſo diſplayed a ſingular humour in making marriages between old men and girls, and young men and women of fourſcore. It may, however, on the whole, be aſſerted, that if he had not been intoxicated with wine and power, the qualities of his mind and body might have rendered him a more reſpectable member of ſociety. He was very remarkable for ſwiftneſs of foot and dexterity in drawing the bow. The reverſes of fortune made ſmall impreſſion on his mind, and he purſued with reſolute firmneſs any object in which he ſeriouſly engaged. Diſſembling, avaricious, and blaſphemous, he gave full proof, that his moral qualities were greatly depraved. (*Mod. Un. Hiſt. Gen. Biog.*)

AMYCLÆ, a city of Laconia, diſtant about 18 miles from the metropolis, founded by Amyclas the ſon of Lacedæmon, and famed afterwards for the birth of Caſtor and Pollux the ſons of Tyndarus, eighth king of Sparta. It was afterwards famed for ſending a conſiderable colony of its own inhabitants into Upper Calabria, who built there a city which they called by the ſame name. This laſt city was ſituated between Cajeta and Terracina, and gave its name to the neighbouring ſea. According to Pliny and Solinus, the territory of Amyclæ was ſo infeſted with vipers and other ſerpents, that the inhabitants were obliged to abandon their dwellings and ſettle elſewhere. Among the ancient poets, the Amycli, or inhabitants of this city, obtained the epithet of *taciti*, "ſilent." The reaſon of this was, either becauſe it was built by the Lacedæmonians, who, as they followed the doctrine of Pythagoras, were always inculcating the precept of ſilence, and thence called *taciti*: or becauſe of a law which obtained in this place, forbidding any one, under ſevere penalties, to mention the approach of an enemy. Before this law was made, the city was daily alarmed by falſe reports, as if the enemy had been already at the gates. From terrors of this kind the above-mentioned law indeed delivered them; but, in the end, it proved the ruin of the city: for the Dorians appearing unexpectedly under the walls, no one ventured to tranſgreſs the law; ſo that the city was eaſily taken. They reduced it to an inconſiderable hamlet; in which, however, were ſeen ſome of the remains of its ancient grandeur. One of the fineſt buildings that eſcaped the common ruin, was the temple and ſtatue of Alexandra, whom the inhabitants pretended to be the ſame with Caſſandra the daughter of Priam.

Amygdalus ‖ Amyot.

AMYGDALUS, the Almond and Peach. See Botany *Index*.

AMYLACEOUS, from *amylum*, "ſtarch;" a term applied to the fine flour of farinaceous ſeeds, in which conſiſts their nutritive part. See Bread.

AMYNTA, in literary hiſtory, a beautiful paſtoral comedy, compoſed by Taſſo; the model of all dramatic pieces wherein ſhepherds are actors. The *Paſtor Fido*, and *Filli di Sciro*, are only copies of this excellent piece.

AMYNTOR, ἀμύντωρ, formed of the verb ἀμύνω, *I defend* or *avenge*, properly denotes a perſon who defends or vindicates a cauſe. In this ſenſe, Mr Toland entitles his defence of Milton's life, *Amyntor*, as being a vindication of that work againſt Mr Blackhall and others, who had charged him with queſtioning the authority of ſome of the books of the New Teſtament, and declaring his doubt that ſeveral pieces under the name of Chriſt and his Apoſtles, received now by the whole Chriſtian church, were ſuppoſititious.

AMYOT, James, biſhop of Auxerre and great almoner of France, was born of an obſcure family at Melun, the 30th of October 1514, and ſtudied philoſophy at Paris, in the college of Cardinal Le Moine. He was naturally dull and heavy; but diligence and application made amends for theſe natural defects. He left Paris at the age of 23; and went to Bourges with the Sieur Colin, who had the abbey of St Ambroſe in that city. At the recommendation of this abbot, a ſecretary of ſtate took Amyot into his houſe to be tutor to his children. The great improvements they made under his direction induced the ſecretary to recommend him to the Princeſs Margaret ducheſs of Berry, only ſiſter of Francis I. and by means of this recommendation Amyot was made public profeſſor of Greek and Latin in the univerſity of Bourges. It was during this time he tranſlated into French the

"Amours

Amyraldism || Ana.

"Amours of Theagines and Chariclea," which Francis I. was ſo pleaſed with, that he conferred upon him the abbey of Belloſane. He alſo tranſlated Plutarch's Lives, which he dedicated to the king; and afterwards undertook that of Plutarch's Morals, which he ended in the reign of Charles IX. and dedicated to that prince. Charles conferred upon him the abbey of St Cornelius de Compiegne, and made him great almoner of France and biſhop of Auxerre. He died in 1593, aged 79.

AMYRALDISM, a name given by ſome writers to the doctrine of univerſal grace, as explained and aſſerted by Amyraldus, or Moſes Amyrault, and others his followers, among the reformed in France, towards the middle of the 17th century.

This doctrine principally conſiſted of the following particulars, viz. that God *deſires* the happineſs of all men, and none are excluded by a divine decree; that none can obtain ſalvation without faith in Chriſt; that God refuſes to none the *power of believing*, though he does not grant to *all* his aſſiſtance, that they may improve this power to ſaving purpoſes; and that many periſh through their own fault. Thoſe who embraced this doctrine were called *Univerſaliſts*; though it is evident they rendered grace *univerſal* in words, but *partial* in reality, and are chargeable with greater inconſiſtencies than the *Supralapſarians*.

AMYRAULT, Moses, an eminent French Proteſtant divine, born at Bourgueil in Touraine in 1566. He ſtudied at Saumur, where he was choſen profeſſor of theology; and his learned works gained him the eſteem of Catholics as well as Proteſtants, particularly of Cardinal Richelieu, who conſulted him on a plan of reuniting their churches, which, however, as may well be ſuppoſed, came to nothing. He publiſhed a piece in which he attempted to explain the myſtery of predeſtination and grace, which occaſioned a controverſy between him and ſome other divines. He alſo wrote, An Apology for the Proteſtants; a Paraphraſe on the New Teſtament; and ſeveral other books. This eminent divine died in 1664.

AMYRIS. See Botany *Index*.

ANA, among phyſicians, denotes a quantity equal to that of the preceding ingredient. It is abbreviated thus, ää, or ā.

Ana, in matters of literature, a Latin termination, adopted into the titles of ſeveral books in other languages.—*Anas*, or *books in ana*, are collections of the memorable ſayings of perſons of learning and wit; much the ſame with what we otherwiſe call *table-talk*.

Wolfius has given the hiſtory of books in ana, in the preface to the Caſauboniana. He there obſerves, that though ſuch titles be new, the thing itſelf is very old; that Xenophon's books of the deeds and ſayings of Socrates, as well as the dialogues of Plato, are *Socratiana*; that the apophthegms of the philoſophers collected by Diogenes Laërtius, the ſentences of Pythagoras and thoſe of Epictetus, the works of Athenæus, Stobeus, and divers others, are ſo many anas. Even the Gemara of the Jews, with ſeveral other oriental writings, according to Wolfius, properly belong to the ſame claſs. To this head of ana may likewiſe be referred the Orphica, the Pythagoræa, Æſopica, Pyrrhonea, &c.

Scaligerana was the firſt piece that appeared with a title in Ana. It was compoſed by Iſan de Vaſſan, a young Champenois, recommended to Jol. Scaliger by Caſaubon. Being much with Scaliger, who was daily viſited by the men of learning at Leyden, De Vaſſan wrote down whatever things of any moment he heard Scaliger ſay. And thus aroſe the Scaligerana, which was not printed till many years after, at Geneva in 1666. Patin. Let. 431.—Soon after came the Perroniana, Thuana, Naudæana, Patineana, Sorberiana, Menagiana, Anti-Menagiana, Furetiana, Chevræana, Leibnitziana, Arlequiniana, Poggiana, &c.

ANABAPTISTON, the ſame with Abaptiſton.

ANABAPTISTS, a name which has been indiſcriminately applied to Chriſtians of very different principles and practices; though many of them object to the denomination, and hold nothing in common, beſides the opinion that baptiſm ought always to be performed by immerſion, and not adminiſtered before the age of diſcretion.

The word Anabaptiſt is compounded of ἀνα, "new," and βαπτιστης, "a baptiſt;" and in this ſenſe the Novatians, the Cataphrygians, and the Donatiſts, may be conſidered as a kind of Anabaptiſts in the earlier ages, though not then denoted by this name; for they contended, that thoſe Chriſtians of the Catholic church who joined themſelves to their reſpective parties ſhould be rebaptized. But we muſt not claſs under the ſame denomination thoſe biſhops of Aſia and Africa, who, in the third century, maintained, that baptiſm adminiſtered by thoſe whom they called heretics was not valid, and therefore that ſuch of them as returned into their churches ought to be rebaptized. Nor do the Engliſh and Dutch Baptiſts conſider the denomination as at all applicable to their ſect: by whom the baptiſm appointed by Chriſt is held to be "nothing ſhort of *immerſion upon a perſonal profeſſion of faith*; of which profeſſion infants being incapable, and ſprinkling being no adequate ſymbol of the thing intended, the baptizing of proſelytes to their communion, who in their infancy had undergone the ceremony of ſprinkling, cannot, it is urged, be interpreted a repetition of the baptiſmal ordinance.

Anabaptiſts, in a ſtrict and proper ſenſe, appear to be thoſe who not only rebaptize, when they arrive at an adult age, perſons that were baptized in their infancy, but alſo, as often as any perſon comes from one of their ſects to another, or as often as any one is excluded from their communion and again received into the boſom of their church, they baptize him. And ſuch were many of the German Baptiſts. But the ſingle opinion common to all the ſects to which the name of *Anabaptiſts* has been indiſcriminately applied, is that of the invalidity of *infant baptiſm*, in whatever way adminiſtered: And hence the general denomination of *Antipædobaptiſts*; which included Anabaptiſts, Baptiſts, Mennonites, Waterlandians, &c. as diſtinguiſhed by their reſpective peculiarities; though *Anabaptiſts* ſeems to have been adopted by moſt writers as the general term.

To the above peculiar notion concerning the baptiſmal ſacrament, the Anabaptiſts added principles of a different nature, depending upon certain ideas which they entertained concerning a perfect church eſtabliſhment, pure in its members, and free from the inſtitutions of human policy.

Anabaptiſts

The Anabaptiſts appear to have made little noiſe, or to have been little noticed, before the time of the reformation in Germany. The moſt prudent and rational part of them conſidered it poſſible, by human wiſdom, induſtry, and vigilance, to purify the church from the contagion of the wicked, provided the manners and ſpirit of the primitive Chriſtians could but recover their loſt dignity and luſtre; and ſeeing the attempts of Luther, ſeconded by ſeveral perſons of eminent piety, prove ſo ſucceſsful, they hoped that the happy period was arrived in which the reſtoration of the church to purity was to be accompliſhed, under the divine protection, by the labours and counſels of pious and eminent men. Others, far from being ſatisfied with the plan of reformation propoſed by Luther, looked upon it as much beneath the ſublimity of their views; and conſequently undertook a more perfect reformation, or, to expreſs more properly their viſionary enterpriſe, they propoſed to found a new church, entirely ſpiritual, and truly divine.

This ſect was ſoon joined by great numbers, and (as uſually happens in ſudden revolutions of this nature) by many perſons, whoſe characters and capacities were very different, though their views ſeemed to turn upon the ſame object. Their progreſs was rapid; for, in a very ſhort ſpace of time, their diſcourſes, viſions, and predictions, excited commotions in a great part of Europe, and drew into their communion a prodigious multitude, whoſe ignorance rendered them eaſy victims to the illuſions of enthuſiaſm. The moſt pernicious faction of all thoſe which compoſed this motley multitude, was that which pretended that the founders of the new and *perfect church*, already mentioned, were under the direction of a divine impulſe, and were armed againſt all oppoſition by the power of working miracles. It was this faction that, in the year 1521, began their fanatical work, under the guidance of Munzer, Stubner, Storck, &c.

Theſe perſons were diſciples of Luther; but well knowing that their opinions were ſuch as would receive no ſanction from him, they availed themſelves of his abſence to diſſeminate them in Wittenburg, and had the addreſs to overreach the piety of Melancthon. Their principal purpoſe was to gain over the populace, and to form a conſiderable party. To effect this, ſays Bayle, they were induſtrious and active, each in his own way. Storck wanting knowledge, boaſted of inſpiration; and Stubner, who had both genius and erudition, laboured at commodious explications of Scripture. Not content with diſcrediting the court of Rome, and decrying the authority of conſiſtories, they taught, That among Chriſtians, who had the precepts of the goſpel to direct, and the Spirit of God to guide them, the office of magiſtracy was not only unneceſſary, but an unlawful encroachment on their ſpiritual liberty: that the diſtinctions occaſioned by birth, or rank, or wealth, being contrary to the ſpirit of the goſpel, which conſiders all men as equal, ſhould be entirely aboliſhed; that all Chriſtians, throwing their poſſeſſions into one common ſtock, ſhould live together in that ſtate of equality which becomes members of the ſame family; that as neither the laws of nature nor the precepts of the New Teſtament had placed any reſtraint upon men with regard to the number of wives which they might marry, they ſhould uſe that liberty which God himſelf had granted to the patriarchs. Anabaptiſts.

They employed at firſt the various arts of perſuaſion in order to propagate their doctrine. They preached, exhorted, admoniſhed, and reaſoned, in a manner that ſeemed proper to impreſs the multitude; and related a great number of viſions and revelations with which they pretended to have been favoured from above. But when they ſaw that theſe methods of making proſelytes were not attended with ſuch a rapid ſucceſs as they fondly expected, and that the miniſtry of Luther and other eminent reformers was detrimental to their cauſe, they then had recourſe to more expeditious meaſures, and madly attempted to propagate their fanatical doctrine by force of arms. Munzer and his aſſociates, in the year 1525, put themſelves at the head of a numerous army, compoſed for the moſt part of the peaſants of Suabia, Thuringia, Franconia, and Saxony; and declared war againſt all laws, government, and magiſtrates of every kind, under the chimerical pretext that Chriſt was now to take the reins of civil and eccleſiaſtical government into his own hands, and to rule alone over the nations. But this ſeditious crowd was routed and diſperſed, without much difficulty, by the elector of Saxony and other princes; and Munzer their ringleader ignominiouſly put to death, and his factious counſellors ſcattered abroad in different places.

Many of his followers, however, ſurvived and propagated their opinions through Germany, Switzerland, and Holland. In the year 1533, a party of them ſettled at Munſter under the direction of two Anabaptiſt prophets, John Matthias a baker of Haerlem, and John Bockholdt a journeyman taylor of Leyden. Having made themſelves maſters of the city, they depoſed the magiſtrates, confiſcated the eſtates of ſuch as had eſcaped, and depoſited the wealth they amaſſed together in a public treaſury for common uſe. They made preparations of every kind for the defence of the city: and ſent out emiſſaries to the Anabaptiſts in the Low Countries, inviting them to aſſemble at Munſter, which was now dignified with the name of Mount Sion, that from hence they might be deputed to reduce all the nations of the earth under their dominion. Matthias, who was the firſt in command, was ſoon cut off in an act of frenzy by the biſhop of Munſter's army; and was ſucceeded by Bockholdt, who was proclaimed by a ſpecial deſignation of Heaven, as he pretended, king of Sion, and inveſted with legiſlative powers like thoſe of Moſes. The extravagancies of Bockholdt were too numerous to be recited: it will be ſufficient to add, that the city of Munſter was taken after a long ſiege and an obſtinate reſiſtance; and Bockholdt, the mock monarch, was puniſhed with a moſt painful and ignominious death.

It muſt, however, be acknowledged, that the true riſe of the numerous inſurrections of this period ought not to be attributed to religious opinions. The firſt inſurgents groaned under the moſt grievous oppreſſions; they took up arms principally in defence of their civil liberties; and of the commotions that took place, the Anabaptiſt leaders above mentioned ſeem rather to have availed themſelves, than to have been the prime movers. See the article REFORMATION — That a great part of the main body, indeed, conſiſted

of

Anabaptiſts || Anabolæum.

of Anabaptiſts, ſeems indiſputable; and whatever fanaticiſm exiſted among them would naturally be called forth or be inflamed by the ſituations that occurred, and run riot in its wildeſt ſhapes. At the ſame time it appears from hiſtory, that a great part alſo conſiſted of Roman Catholics, and a ſtill greater of perſons who had ſcarcely any religious principles at all. Indeed, when we read of the vaſt numbers that were concerned in thoſe inſurrections, of whom it is reported that 100,000 fell by the ſword, it appears reaſonable to conclude that a great majority of them were not Anabaptiſts.

Before concluding this article, it muſt be remarked, that the Baptiſts or Mennonites in England and Holland are to be conſidered in a very different light from the enthuſiaſts we have been deſcribing: And it appears equally uncandid and invidious, to trace up their diſtinguiſhing ſentiment, as ſome of their adverſaries have done, to thoſe obnoxious characters, and there to ſtop, in order as it were to aſſociate with it the ideas of turbulence and fanaticiſm, with which it certainly has no natural connexion. Their coincidence with ſome of thoſe oppreſſed and infatuated people in denying baptiſm to infants, is acknowledged by the Baptiſts: but they diſavow the practice which the appellation of *Anabaptiſts* implies; and their doctrines ſeem referable to a more ancient and reſpectable origin. They appear ſupported by hiſtory in conſidering themſelves as the deſcendants of the Waldenſes, who were ſo grievouſly oppreſſed and perſecuted by the deſpotic heads of the Romiſh hierarchy; and they profeſs an equal averſion to all principles of rebellion on one hand, and to all ſuggeſtions of fanaticiſm on the other. See Baptists. The denomination of *Mennonites*, by which they are diſtinguiſhed in Holland, they derive from Menno, the famous man who latterly gave conſiſtence and ſtability to their ſect. See Mennonites.

ANABASII, in antiquity, were couriers who were ſent on horſeback or in chariots, with deſpatches of importance.

ANABASIS. See Botany *Index*.

ANABATHRA, in ancient writers, denotes a kind of ſteps or ladder whereby to aſcend to ſome eminence. In this ſenſe we read of the anabathra of theatres, pulpits, &c. Anabathra appears to have been ſometimes alſo applied to ranges of ſeats riſing gradually over each other.

Anabathra is more particularly applied to a kind of ſtone blocks raiſed by the highway ſides, to aſſiſt travellers in mounting or alighting, before the uſe of ſtirrups was invented. The firſt author of this contrivance among the Romans was C. Gracchus brother of Tiberius.

ANABLEPS, in *Ichthyology*, the trivial name of a ſpecies of cobitis. See Cobitis.

ANABOA, a ſmall iſland ſituated near the coaſt of Loango in Africa, in E. Long. 9°, N. Lat. 1°. Here are ſeveral fertile valleys, which produce plenty of bananas, oranges, pine apples, lemons, citrons, tamarinds, cocoa nuts, &c. together with vaſt quantities of cotton. In this iſland are two high mountains, which, being continually covered with clouds, occaſion frequent rains.

ANABOLÆUM, or Anabole, in antiquity, a kind of great or upper coat, worn over the tunica.

ANABOLEUS, in antiquity, an appellation given to grooms of the ſtable, or equerries, who aſſiſted their maſters in mounting their horſes. As the ancients had no ſtirrups, or inſtruments that are now in uſe for mounting a horſe, they either jumped upon his back, or were aided in mounting by anaboleï. Anabolæus || Anaharſis

ANACALYPTERIA, according to Suidas, were preſents made to the bride by her huſband's relations and friends, when the firſt uncovered her face and ſhowed herſelf to men. Theſe preſents were alſo called *παυλαια*: for, among the Greeks, virgins before marriage were under ſtrict confinement, being rarely permitted to appear in public, or converſe with the other ſex; and when allowed that liberty, wore a veil over their faces, termed *Καλυπτρον*, or *Καλυπτρα*, which was not left off in the preſence of men till the third day after marriage; whence, according to Heſychius, this day was alſo called *anacalypterion*.

ANACAMPSEROS, in *Botany*, a ſynonyme of the portulaca and ſeveral other plants.

ANACAMPTERIA, in eccleſiaſtical antiquity, a kind of little edifices adjacent to the churches, deſigned for the entertainment of ſtrangers and poor perſons.

ANACAMPTIC, a name applied by the ancients to that part of optics which treats of reflection, being the ſame with what is now called Catoptrics.

ANACARDIUM, or cashew-nut tree. See Botany *Index*.

ANACEPHALÆOSIS, in *Rhetoric*, the ſame with Recapitulation. See Recapitulation.

ANACHARSIS, a Scythian philoſopher, who lived about 600 years before Chriſt. His father was one of the chiefs of his nation, and married a woman of Greece. Inſtructed in the Greek language by his mother, he caught the flame for Grecian literature, and prevailed upon the king to intruſt him with an embaſſy to Athens. Arrived in that renowned city, he was introduced to Solon by one of his own countrymen, named *Toxaris*; and it is reported, that when he came to the door of Solon, he requeſted a ſervant to inform his maſter, that Anacharſis a Scythian was at the door, and was deſirous of being received as his friend and gueſt. Solon is ſaid to have returned for anſwer, that "friendſhips are beſt formed at home." To this the Scythian philoſopher replied, "then let Solon who is at home, make me his friend and receive me into his houſe." Solon was ſo aſtoniſhed at the propriety of this reply, that he gave him admittance; and, finding him upon father acquaintance worthy of his confidence, he honoured him with his friendſhip. From ſuch a well qualified maſter, Anacharſis rapidly acquired a knowledge of the wiſdom of Greece, and the literature then in circulation. By the influence of Solon he was introduced to the principal characters of Athens, and was the firſt ſtranger who was honoured with the title of citizen by the Athenians.

After he had reſided ſeveral years at Athens, he travelled through different countries in queſt of knowledge, and then returned to his native country inflamed with the deſire of inſtructing them in the laws and the religion of the Greeks. But his countrymen were not prepared to profit by his inſtructions; and while he was performing ſacrifice to the goddeſs Cybele, correſpondent to a vow which he had made on his

Anachoret ‖ Anacharfis.

his way home, he was ſlain by an arrow, ſaid to have proceeded from the king's own hand. Thus fell the Scythian philoſopher a victim to the folly and ignorance of his countrymen, who wantonly rejected the wiſdom and learning of Greece.

The energetic manner in which he was accuſtomed to expreſs himſelf, gave birth to the proverbial ſaying, "Scythian eloquence." Although the potter's wheel was invented in the days of Homer, ſome have inaccurately aſcribed its invention to Anacharſis. The following ingenious ſayings may be mentioned as a ſpecimen of his genius. "The beſt way of teaching a youth ſobriety, is to ſet before his eyes a drunken man. The vine bears three ſorts of fruit; the firſt pleaſure, the ſecond intoxication, the third remorſe. An ape is by nature ridiculous; man by art and ſtudy. An Athenian of bad morals reproached him with being a Scythian: to him he replied, "My country may be a diſgrace to me, but you are a diſgrace to your country." Some ſuppoſe, that the epiſtles which bear his name are ſpurious. (*Gen. Biog.*)

ANACHORET, in church hiſtory, denotes a hermit, or ſolitary monk, who retires from the ſociety of mankind into ſome deſert, with a view to avoid the temptations of the world, and to be more at leiſure for meditation and prayer. Such were Paul, Anthony, and Hilarion, the firſt founders of monaſtic life in Egypt and Paleſtine.

Anachorets, among the Greeks, conſiſt principally of monks, who retire to caves or cells, with the leave of the abbot, and an allowance from the monaſtery; or who, weary of the fatigues of the monaſtery, purchaſe a ſpot of ground, to which they retreat, never appearing again in the monaſtery unleſs on ſolemn occaſions.

ANACHRONISM, in matters of literature, an error with reſpect to chronology, whereby an event is placed earlier than it really happened.—The word is compounded of ανα, "higher," and χρονος, "time." Such is that of Virgil, who placed Dido in Africa at the time of Æneas, though in reality ſhe did not come there till 300 years after the taking of Troy.—An error on the other ſide, whereby a fact is placed later and lower than it ſhould be, is called a *parachroniſm*.

ANACLASTIC GLASSES, a kind of ſonorous phials or glaſſes, chiefly made in Germany, which have the property of being flexible, and emitting a vehement noiſe by the human breath.—They are alſo called *vexing glaſſes* by the Germans (*vexier gloſer*), on account of the fright and diſturbance they occaſion by their reſilition. The anaclaſtic glaſſes are a low kind of phials with flat bellies, reſembling inverted funnels, whoſe bottoms are very thin, ſcarce ſurpaſſing the thickneſs of an onion peel: this bottom is not quite flat, but a little convex. But upon applying the mouth to the orifice, and gently inſpiring, or as it were ſucking out the air, the bottom gives way with a prodigious crack, and of convex becomes concave. On the contrary, upon exſpiring or breathing gently into the orifice of the ſame glaſs, the bottom with no leſs noiſe bounds back to its former place, and becomes gibbous as before.—The anaclaſtic glaſſes firſt taken notice of were in the caſtle of Goldbach; where one of the academiſts *Naturæ Curioſorum*, having ſeen and made experiments on them, publiſhed a piece expreſs on their hiſtory and phenomena. They are all made of a fine white glaſs. It is to be obſerved, 1. That if the bottom be concave at the time of inſpiration, it will burſt; and the like will happen if it be convex at the time of exſpiration. 2. A ſtrong breath will have the ſame effect even under the contrary circumſtances.

Anaclaſtics ‖ Anacreon.

ANACLASTICS, that part of optics which conſiders the refraction of light, and is commonly called *Dioptrics*. See DIOPTRICS.

ANACLETERIA, in antiquity, a ſolemn feſtival celebrated by the ancients when their kings or princes came of age, and aſſumed the reins of government. It is ſo called, becauſe proclamation being made of this event to the people, they went to ſalute their prince during the anacleteria, and to congratulate him upon his new dignity.

ANACLETICUM, in the ancient art of war, a particular blaſt of the trumpet, whereby the fearful and flying ſoldiers were rallied, and recalled to combat.

ANACLINOPALE, (Αναχλινοπαλη,) in antiquity, a kind of wreſtling, wherein the champions threw themſelves voluntarily on the ground, and continued the combat by pinching, biting, ſcratching, and other methods of offence. The *Anaclinopale* were contradiſtinguiſhed from the *Orthopale*, wherein the champions ſtood erect. In the *Anaclinopale*, the weaker combatants ſometimes gained the victory.

ANACLINTERIA, in antiquity, a kind of pillows on the dining bed, whereon the gueſts uſed to lean. The ancient tricliniary beds had four pillows, one at the head, another at the feet, a third at the back, and a fourth at the breaſt. That on which the head lay, was properly called by the Greeks αναχλινητηριον or αναχλινιδιον; by the Romans *fulcrum*, ſometimes *pluteus*.

ANACOLLEMA, a compoſition of aſtringent powders, applied by the ancients to the head, to prevent defluxions on the eyes.

ANACONDO, in *Natural Hiſtory*, is a name given in the iſle of Ceylon to a very large and terrible ſnake, which often devours the unfortunate traveller alive, and is itſelf accounted excellent and delicious fare. It is probably the *Boa Conſtrictor*.

ANACREON, a Greek poet, born at Teos, a city of Ionia, flouriſhed about 532 years before the Chriſtian era. Polycrates, tyrant of Samos, invited him to his court, and made him ſhare with him in his buſineſs and his pleaſures. He had a delicate wit, as may be judged from the inexpreſſible beauties and graces that ſhine in his works: but he was fond of pleaſure, was of an amorous diſpoſition, and addicted to drunkenneſs: yet, notwithſtanding his debaucheries, he lived to the age of 85; when, we are told, he was choked by a grapeſtone which ſtuck in his throat as he was regaling on ſome new wine.

There is but a ſmall part of Anacreon's works that remain: for, beſides his odes and epigrams, he compoſed elegies, hymns, and iambics. His poems which are extant were reſcued from oblivion by Henry Stephens, and are univerſally admired. The verſes of Anacreon are ſweeter, ſays Scaliger, than Indian ſugar. His beauty and chief excellence, ſays Madame Dacier, lay in imitating nature, and in following reaſon; ſo that he preſented to the mind no images but what were noble and natural. The odes of Anacreon, ſays Rapin,

Anacreontic || Anaduomene.

pin, are flowers, beauties, and perpetual graces; it is familiar to him to write what is natural, and to the life, he having an air ſo delicate, ſo eaſy, and graceful, that among all the ancients there is nothing comparable to the method he took, nor to that kind of writing he followed. He flows ſoft and eaſy, everywhere diffuſing the joy and indolence of his mind through his verſe, and tuning his harp to the ſmooth and pleaſant temper of his ſoul. But none has given a juſter character of his writings than the God of Love, as taught to ſpeak by Mr Cowley:

All thy verſe is ſofter far
Than the downy feathers are
Of my wings, or of my arrows,
Of my mother's doves and ſparrows:
Graceful, cleanly, ſmooth, or round,
All with Venus' girdle bound.

ANACREONTIC VERSE, in ancient poetry, a kind of verſe, ſo called from its being much uſed by the poet Anacreon. It conſiſts of three feet and a half, uſually ſpondees and iambuſes, and ſometimes anapeſts: Such is that of Horace,

Lydia, dic per omnes.

ANACRISIS, among the ancient Greeks, was uſed for a kind of trial or examination, which the archons, or chief magiſtrates of Athens, were to undergo before their admiſſion into that office. The *anacriſis* ſtands diſtinguiſhed from the *docimaſia*, which was a ſecond examination in the forum. The anacriſis was performed in the ſenate-houſe. The queſtions here propoſed to them were concerning their family, kindred, behaviour, eſtate, &c. Some will have it that all magiſtrates underwent the anacriſis.

ANACRISIS, among civilians, an inveſtigation of truth, interrogation of witneſſes, and inquiry made into any fact, eſpecially by torture.

ANACROSIS, in antiquity, denotes a part of the Pythian ſong, wherein the combat of Apollo and Python is deſcribed.—The anacroſis was the firſt part, and contained the preparation to the fight.

ANACYCLUS. See BOTANY *Index*.

ANADAVADÆA, in *Ornithology*, a barbarous name of a ſpecies of alauda. See ALAUDA, ORNITHOLOGY *Index*.

ANADEMA, among the ancients, denotes an ornament of the head, wherewith victors at the ſacred games had their temples bound.

ANADIPLOSIS, in *Rhetoric* and *Poetry*, a repetition of the laſt word of a line, or clauſe of a ſentence, in the beginning of the next: thus,

Pierides, vos hæc facietis maxima Gallo:
Gallo, cujus amor, &c.
Et matutinis accreduta vocibus inſtat,
Vocibus inſtat, et aſſiduas jacit ore querelas.

ANADROMUS, among *Ichthyologiſts*, a name given to ſuch fiſhes as go from the ſea to the freſh waters at ſtated ſeaſons, and return back again; ſuch as the ſalmon, &c. See SALMO.

ANADUOMENE VENUS, in the *Grecian Mythology*, anſwered to the Sea Venus in the Roman, and was the appellation given to one of the chief deities of the ſea. The moſt celebrated picture in all antiquity was that of this goddeſs by Apelles; and the famous Venus of Medicis is a Sea Venus.

Anædeia || Anagnia.

ANÆDEIA, in antiquity, a denomination given to a ſilver ſtool placed in the Areopagus, on which the defendant, or perſon accuſed, was ſeated for examination. The word is Greek, Ἀναίδεια, which imports imprudence; but according to Junius's correction, it ſhould rather be Ἀναΐλια, q. d. *innocence*. The plaintiff or accuſer, was placed on an oppoſite ſtool called *hybris*, or injury; here he propoſed three queſtions to the party accuſed, to which poſitive anſwers were to be given. The firſt, Are you guilty of this fact? The ſecond, How did you commit the fact? The third, Who were your accomplices?

ANÆSTHESIA, ſignifies a privation of the ſenſes.

ANAGALLIS, PIMPERNEL. See BOTANY *Index*.

ANAGNIA, in *Ancient Geography*, a town of Latium, capital of the Hernici; which, after a faint reſiſtance, ſubmitting to the Romans, was admitted to the freedom of the city, yet without the right of ſuffrage, (Livy.) It was afterwards a colony of Druſus Cæſar, and walled round, and its territory aſſigned to the veterans, (Frontinus.) Here Antony married Cleopatra, and divorced Octavia. Now *Anagni*, 36 miles to the eaſt of Rome. Long. 13. 45. N. Lat. 42. 48.

ANAGNOSTA, or ANAGNOSTES, in antiquity, a kind of literary ſervant, retained in the families of perſons of diſtinction, whoſe chief buſineſs was to read to them during meals, or at any other time when they were at leiſure. Cornelius Nepos relates of Atticus, that he had always an agnoſtes at his meals. He never ſupped without reading; ſo that the minds of his gueſts were no leſs agreeably entertained than their appetites. The ſame cuſtom, Eginhard obſerves, was kept up by Charlemagne, who at table had the hiſtories and acts of ancient kings read to him. This cuſtom ſeems to have been a relick of that of the ancient Greeks, who had the praiſes of great men and heroes ſung to them while at table. The ancient monks and clergy kept up the like uſage, as we are informed by St Auguſtin.

ANAGOGICAL, ſignifies myſterious, tranſporting; and is uſed to expreſs whatever elevates the mind, not only to the knowledge of divine things, but of divine things in the next life. This word is ſeldom uſed, but with regard to the different ſenſes of Scripture. The anagogical ſenſe is, when the ſacred text is explained with regard to eternal life, the point which Chriſtians ſhould have in view: for example, the reſt of the Sabbath, in the anagogical ſenſe, ſignifies the repoſe of everlaſting happineſs.

ANAGOGY, or ANAGOGE, among eccleſiaſtical writers, the elevation of the mind to things celeſtial and eternal.—It is particularly uſed, where words, in their natural or primary meaning, denote ſomething ſenſible, but have a further view to ſomething ſpiritual or inviſible.

ANAGOGY, in a more particular ſenſe, denotes the application of the types and allegories of the Old Teſtament to ſubjects of the New; thus called, becauſe the veil being here drawn, what before was hidden is expoſed to open ſight.

ANAGRAM (from the Greek ἀνα, backwards, and γραμμα,

Anagram ‖ Anak.

γραμμα, *letter*), in matters of literature, a tranſpoſition of the letters of ſome name, whereby a new word is formed, either to the advantage or diſadvantage of the perſon or thing to which the name belongs. Thus, the anagram of Galenus is *angelus*; that of Logica, *caligo*; that of Alitedius, *fedulitas*; that of Loraine is *alerion*, on which account it was that the family of Loraine took *alerions* for their armoury.—Calvin, in the title of his *Inſtitutions*, printed at Straſburgh in 1539 calls himſelf *Alcuinus*, which is the anagram of Calvinus, and the name of an eminently learned perſon in the time of Charlemagne, who contributed greatly to the reſtoration of learning in that age.

Thoſe who adhere ſtrictly to the definition of an anagram, take no other liberty than that of omitting or retaining the letter H, at pleaſure; whereas others make no ſcruple to uſe E for Æ, V for W, S for Z, and C for K; and *vice verſa*.

Beſides anagrams formed as above, we meet with another kind in ancient writers, made by dividing a ſingle word into ſeveral; thus, *ſus tinea mus*, are formed out of the word *ſuſtineamus*.

Anagrams are ſometimes alſo made out of ſeveral words: ſuch as that on the queſtion put by Pilate to our Saviour, *Quid eſt veritas?* whereof we have this admirable anagram, viz. *Eſt vir qui adeſt*.

The Cabbaliſts among the Jews are profeſſed anagrammatiſts; the third part of their art, which they call *themuru*, i. e. "changing," being nothing but the art of making anagrams, or finding hidden and myſtical meanings in names; which they do by changing, tranſpoſing, and differently combining, the letters of thoſe names.—Thus, of נח the letters of Noah's name, they make חן *grace*; of משיח *the Meſſiah*, they make ישמח *he ſhall rejoice*.

ANAGRAMMATIST, a maker or compoſer of anagrams. Thomas Billon, a Provençal, was a celebrated anagrammatiſt, and retained by Louis XIII. with a penſion of 1200 livres, in quality of anagrammatiſt to the king.

ANAGROS, in *Commerce*, a meaſure for grain uſed in ſome cities in Spain, particularly at Seville; 46 anagros make about 10¼ quarters of London.

ANAGYRIS, STINKING BEAN-TREFOIL. See BOTANY *Index*.

ANAGYRIS, or ANAGYRUS, in *Ancient Geography*, the name of a place in Attica, of the tribe Erechtheis, where a fetid plant, called *Anagyris*, probably the ſame with the foregoing, grew in great plenty, (Dioſcorides, Pliny, Stephanus); and the more it was handled, the ſtronger it ſmelled; hence *commovere anagyrin* or (*anagyrum*), is to bring a misfortune on one's ſelf (Ariſtophanes.)

ANAK, the father of the Anakims, was the ſon of Arba, who gave his name to Kirjath-arba, or Hebron, (Joſh. xiv. 15.) Anak had three ſons, Shethai, Ahiman, and Talmai, (chap. xv. 14. and Numb. xiii. 22.), who, as well as their father, were giants, and who, with their poſterity, all terrible for their fierceneſs and extraordinary ſtature, were called the *Anakims*; in compariſon of whom the Hebrews, who were ſent to view the land of Canaan, reported that they were but as graſhoppers, Numb. xiii. *ult*. Caleb, aſſiſted by the tribe of Judah, took Kirjath-arba, and deſtroyed the Anakims (Judges i. 20. and Joſh. xv. 14.) in the year of the world 2559.

Analecta ‖ Analogy.

ANALECTA, or ANALECTES, in antiquity, a ſervant whoſe employment it was to gather up the offals of tables.

ANALECTA, *Analects*, in a literary ſenſe, is uſed to denote a collection of ſmall pieces; as, eſſays, remarks, &c.

ANALEMMA, in *Geometry*, a projection of the ſphere on the plane of the meridian, orthographically made by ſtraight lines and ellipſes, the eye being ſuppoſed at an infinite diſtance, and in the eaſt or weſt points of the horizon.

ANALEMMA denotes likewiſe an inſtrument of braſs or wood, upon which this kind of projection is drawn, with a horizon and curſor fitted to it, wherein the ſolſtitial colure, and all circles parallel to it, will be concentric circles; all circles oblique to the eye will be ellipſes; and all circles whoſe planes paſs through the eye, will be right lines. The uſe of this inſtrument is to ſhow the common aſtronomical problems; which it will do, though not very exactly, unleſs it be very large.

ANALEPSIS, the augmentation or nutrition of an emaciated body.

ANALEPTICS, reſtorative or nouriſhing medicines.

ANALOGY, in *Philoſophy*, a certain relation and agreement between two or more things, which in other reſpects are entirely different.

There is likewiſe an analogy between beings that have ſome conformity or reſemblance to one another; for example, between animals and plants; but the analogy is ſtill ſtronger between two different ſpecies of certain animals.

Analogy enters much into all our reaſoning, and ſerves to explain and illuſtrate. A great part of our philoſophy, indeed, has no other foundation than analogy.

It is natural to mankind to judge of things leſs known, by ſome ſimilitude, real or imaginary, between them and things more familiar or better known. And where the things compared have really a great ſimilitude in their nature, when there is reaſon to think that they are ſubject to the ſame laws, there may be a conſiderable degree of probability in concluſions drawn from analogy. Thus we may obſerve a very great ſimilitude between this earth which we inhabit, and the other planets, Saturn, Jupiter, Mars, Venus, and Mercury. They all revolve round the ſun, as the earth does, although at different diſtances, and in different periods. They borrow all their light from the ſun, as the earth does. Several of them are known to revolve round their axis like the earth, and, by that means, muſt have a like ſucceſſion of day and night. Some of them have moons, that ſerve to give them light in the abſence of the ſun, as our moon does to us. They are all, in their motions, ſubject to the ſame law of gravitation as the earth is. From all this ſimilitude, it is not unreaſonable to think, that thoſe planets may, like our earth, be the habitation of various orders of living creatures. There is ſome probability in this concluſion from analogy.

But it ought to be obſerved, that, as this kind of

reaſoning

Analogy.

reaſoning can afford only probable evidence at beſt; ſo unleſs great caution be uſed, we are apt to be led into error by it. To give an inſtance of this: Anatomiſts, in ancient ages, ſeldom diſſected human bodies; but very often the bodies of thoſe quadrupeds whoſe internal ſtructure was thought to approach neareſt to that of the human body. Modern anatomiſts have diſcovered many miſtakes the ancients were led into, by their conceiving a greater ſimilitude between the ſtructure of men and of ſome beaſts than there is in reality.

Reid on the Intellectual Powers, Eſſay I. ch. iv. p. 52.

Perhaps no author has made a more juſt and a more happy uſe of this mode of reaſoning, than Biſhop Butler in his Analogy of Religion, Natural and Revealed, to the Conſtitution and Courſe of Nature. In that excellent work, the author does not ground any of the truths of religion upon analogy, as their proper evidence. He only makes uſe of analogy to anſwer objections againſt them. When objections are made againſt the truths of religion, which may be made with equal ſtrength againſt what we know to be true in the courſe of nature, ſuch objections can have no weight.

Analogical reaſoning, therefore, may be of excellent uſe in anſwering objections againſt truths which have other evidence. It may likewiſe give a greater or a leſs degree of probability in caſes where we can find no other evidence. But all arguments drawn from analogy are ſtill the weaker, the greater diſparity there is between the things compared; and therefore muſt be weakeſt of all when we compare body with mind, becauſe there are no two things in nature more unlike.

There is no ſubject in which men have always been ſo prone to form their notions by analogies of this kind, as in what relates to the mind. We form an early acquaintance with material things by means of our ſenſes, and are bred up in a conſtant familiarity with them. Hence we are apt to meaſure all things by them; and to aſcribe to things moſt remote from matter the qualities that belong to material things. It is for this reaſon that mankind have, in all ages, been ſo prone to conceive the mind itſelf to be ſome ſubtle kind of matter: That they have been diſpoſed to aſcribe human figure and human organs not only to angels, but even to the Deity.

To illuſtrate more fully that analogical reaſoning from a ſuppoſed ſimilitude of mind to body, which appears to be the moſt fruitful ſource of error with regard to the operations of our minds, the following inſtance may be given. When a man is urged by contrary motives, thoſe on one hand inciting him to do ſome action, thoſe on the other to forbear it; he deliberates about it, and at laſt reſolves to do it, or not to do it. The contrary motives are here compared to the weights in the oppoſite ſcales of a balance; and there is not perhaps any inſtance that can be named of a more ſtriking analogy between body and mind. Hence the phraſes of weighing motives, of deliberating upon actions, are common to all languages.

From this analogy, ſome philoſophers draw very important concluſions. They ſay, that as the balance cannot incline to one ſide more than the other when the oppoſite weights are equal, ſo a man cannot poſſibly determine himſelf if the motives on both hands are equal; and as the balance muſt neceſſarily turn to that ſide which has moſt weight, ſo the man muſt neceſſarily be determined to that hand where the motive is ſtrongeſt. And on this foundation ſome of the ſchoolmen maintained, that if a hungry aſs were placed between two bundles of hay equally inviting, the aſs muſt ſtand ſtill and ſtarve to death, being unable to turn to either, becauſe there are equal motives to both. This is an inſtance of that analogical reaſoning, which, it is conceived, ought never to be truſted; for the analogy between a balance and a man deliberating, though one of the ſtrongeſt that can be found between matter and mind, is too weak to ſupport any argument. A piece of dead inactive matter, and an active intelligent being, are things very unlike; and becauſe the one would remain at reſt in a certain caſe, it does not follow that the other would be inactive in a caſe ſomewhat ſimilar. The argument is no better than this, that becauſe a dead animal moves only as it is puſhed, and if puſhed with equal force in contrary directions, muſt remain at reſt; therefore the ſame thing muſt happen to a living animal: for ſurely the ſimilitude between a dead animal and a living is as great as that between a balance and a man.

Analogy.

The derivation of the word Analogy indicates, as Profeſſor Caſtillon of Berlin * obſerves, a reſemblance diſcernible by reaſon. This is confirmed by the ſenſe in which the term is uſed in geometry, where it ſignifies an equality of ratios. In explaining this ſubject, it is obſerved, there may be a reſemblance between ſenſations and a reſemblance between perceptions: the former is called *phyſical reſemblance*, becauſe it affects the phyſical or ſenſitive faculty; the latter *moral reſemblance*, becauſe it affects the moral or rational faculty of man.

* *Harlem Memoirs*, 1766, vol. xxii.

Every reſemblance may be reduced to an equality in ſenſations or perceptions; but this ſuppoſes ſome equality in their cauſes: we ſay *ſome equality*, becauſe the diſpoſition of the organs, or of the ſoul, muſt neceſſarily affect the ſenſations or perceptions; but this can influence only their degree, and not their nature.

The character of one perſon reſembles that of another only when they both ſpeak and act ſo as to excite equal perceptions, or, to ſpeak more ſtrictly, the ſame perception; when they both diſplay vivacity or indifference, anger or meekneſs, on the ſame occaſions, and both excite in the ſoul of the obſerver identical perceptions, or rather the ſame perception of vivacity or indifference, of anger or meekneſs. Theſe identical perceptions, the degree of which will depend much on the diſpoſition of the obſerver's mind, muſt have identical cauſes, or, in other words, the ſame cauſe; which is the vivacity or indifference, the anger or meekneſs, diſplayed by each of theſe characters.

Every phyſical reſemblance may therefore be reduced to one or more equalities, and every moral reſemblance to one or more identities. Wherever there is moral reſemblance there is analogy. Analogy may therefore be reduced to identity, and always ſuppoſes compariſon.

Two objects are ſaid to have an analogy to each other, or are called *analogous*, when ſome identity is diſcovered upon comparing them. An *analogical concluſion* is a concluſion deduced from ſome identity.

The principles of analogy are a compariſon of two objects; and one or more identities reſulting from their being thus compared. The characters of analogy are —that two objects be compared—that there be one or more identities between theſe objects—and that this is diſcernible only by reaſon or intellect.

Analogy. Analyſis.

Phyſical reſemblance is to the ſenſes what *analogy* is to the underſtanding. The former, when perfect, becomes equality; but the latter, identity.

Reſemblance and analogy are the foundations both of probability and of certainty. When we are not ſatisfied that the reſemblance or the analogy is complete, we ſtop at probability; which becomes certainty when we are, or think we are, aſſured that the reſemblance or the analogy is perfect.

In reaſoning by analogy, we ſhould be careful not to confound it with reſemblance; and alſo not to deduce from the identity or identities, on which the analogy is founded, a concluſion which has either no relation, or only a partial relation, to theſe identities.

The principal uſe of analogy in the inveſtigation of phyſical and moral truth, according to our author, may be reduced to the four following: 1. By means of our ſenſes to improve, firſt our own judgment, and afterwards that of others, with reſpect to intellectual ſubjects. 2. To deduce a general from a particular truth. Having diſcovered and proved the truth of a propoſition with reſpect to any particular object, examine whether this truth flows from a quality peculiar to this ſingle object, or common to ſeveral objects. In the latter caſe all theſe objects may be comprehended under one general idea, founded on their common quality. Subſtitute this general idea inſtead of the particular object, and the propoſition will become general, without ceaſing to be true; becauſe whatever evidently and ſolely reſults from the identity on which an analogy is founded, muſt neceſſarily be true with reſpect to all thoſe objects in which the analogy is the ſame. 3. To prove the truth or falſehood of propoſitions which cannot be otherwiſe demonſtrated. 4. To diſcover new truths in both natural and moral philoſophy.

Analogy, among grammarians, is the correſpondence which a word or phraſe bears to the genius and received forms of any language.

ANALYSIS, in a general ſenſe, implies the reſolution of ſomething compounded into its original and conſtituent parts. The word is Greek, and derived from *αναλυω*, "to reſolve."

Analysis, in *Mathematics*, is properly the method of reſolving problems by means of algebraical equations; whence we often find that theſe two words, *analyſis* and *algebra*, are uſed as ſynonymous.

Analyſis, under its preſent improvements, muſt be allowed the apex or height of all human learning: it is this method which furniſhes us with the moſt perfect examples of the art of reaſoning; gives the mind an uncommon readineſs at deducing and diſcovering, from a few data, [illegible] unknown; and, by uſing ſigns for ideas, preſents things to the imagination, which otherwiſe ſeemed out of its ſphere: by this, geometrical demonſtrations may be greatly abridged, and a long ſeries of argumentations, wherein the mind cannot without the utmoſt effort and attention diſcover the connection of ideas, are hereby converted into ſenſible ſigns, and the ſeveral operations required therein effected by the combination of thoſe ſigns. But, what is more extraordinary, by means of this art, a number of truths are frequently expreſſed by a ſingle line, which in the common way of explaining and demonſtrating things would fill whole volumes. Thus, by mere contemplation of one ſingle line, whole ſciences may be ſometimes learned in a few minutes time, which otherwiſe could ſcarce be attained in many years. Analyſis.

Analysis is divided, with regard to its object, into that of *finites* and *infinites*.

Analysis of Finite Quantities, is what we otherwiſe call ſpecious arithmetic or algebra. See Algebra.

Analysis of Infinites, called alſo the *New Analyſis*, is particularly uſed for the method of fluxions, or the differential calculus. See Fluxions.

Analysis, in *Logic*, ſignifies the method of tracing things backward to their ſource, and of reſolving knowledge into its original principles. This is alſo called the method of *reſolution*; and ſtands oppoſed to the ſynthetic method, or that of *compoſition*. The art of logical analyſis conſiſts principally in combining our perceptions, claſſing them together with addreſs, and contriving proper expreſſions for conveying our thoughts, and repreſenting their ſeveral diviſions, claſſes, and relations.

Analysis, in *Rhetoric*, is that which examines the connexions, tropes, figures, and the like, inquiring into the propoſition, diviſion, paſſions, arguments, and other apparatus of rhetoric.

Several authors, as Freigius and others, have given analyſes of Cicero's Orations, wherein they reduce them to their grammatical and logical principles; ſtrip them of all the ornaments and additions of rhetoric which otherwiſe diſguiſe their true form, and conceal the connexion between one part and another. The deſign of theſe authors is to have thoſe admired harangues juſt ſuch as the judgment diſpoſed them, without the help of imagination; ſo that here we may coolly view the force of each proof, and admire the uſe Cicero made of rhetorical figures to conceal the weak part of a cauſe.

A collection has been made of the analyſes formed by the moſt celebrated authors of the 16th century, in 3 vols folio.

Analysis is alſo uſed, in *Chemiſtry*, for the decompoſition of a mixed body, or the ſeparation of the principles and conſtituent parts of a compounded ſubſtance.

To analyze bodies, or reſolve them into their component parts, is indeed the chief object of the art of chemiſtry. Chemiſtry furniſhes ſeveral means for the decompoſition of bodies, which are all founded on the difference of the properties belonging to the different principles of which the body to be analyzed is compoſed. If, for example, a body be compoſed of ſeveral principles, ſome of which have a great and others a moderate degree of volatility, and, laſtly, others are fixed, its moſt volatile parts may be firſt ſeparated by a gradual heat in diſtilling veſſels; and then the parts which are next in volatility will paſs over in diſtillation; and laſtly, thoſe parts which are fixed, and capable of reſiſting the action of fire, will remain at the bottom of the veſſel.

Analysis is alſo uſed for a kind of ſyllabus, or table of the principal heads or articles of a continued diſcourſe, diſpoſed in their natural order and dependency. Analyſes are more ſcientifical than alphabetical indexes; but they are leſs uſed, as being more intricate.

Analysis is likewiſe uſed for a brief, but methodical, illuſtration of the principles of a ſcience; in which ſenſe

Analytic
||
Anamaboa.

ſenſe it is nearly ſynonymous with what we otherwiſe call a *ſynopſis*.

ANALYTIC, or ANALYTICAL, ſomething that belongs to, or partakes of, the nature of analyſis. — Thus we ſay, an analytical demonſtration, analytical proceſs, analytical table or ſcheme, analytical method of inveſtigation, &c.

The analytic method ſtands oppoſed to the ſynthetic. In natural philoſophy, as in mathematics, the inveſtigation of difficult things by the analytic method ought to precede the method of compoſition. This analyſis conſiſts in making experiments and obſervations, and in drawing general concluſions therefrom by induction; and admitting of no objections againſt the concluſions, but ſuch as are drawn from experiments, and other certain truths: and though the reaſoning from experiments and obſervations by induction be no demonſtration of general concluſions, yet it is the beſt method of reaſoning which the nature of things admits of; and may be eſteemed ſo much the ſtronger, as the induction is more general; and, if no exception occur from phenomena, the concluſion may be pronounced general. By this way of analyſis, we may proceed from compounds to their ingredients; from motions to the forces producing them; and in general from effects to their cauſes, and from particular cauſes to more general ones, until we arrive at thoſe which are the moſt general. This is the analytic method, according to the illuſtrious Newton.

The ſynthetic method conſiſts in aſſuming the cauſes diſcovered and received as principles: and by them explaining the phenomena proceeding from them, and proving the explanation. See SYNTHESIS.

ANALYTICS, (*Analytica*,) the ſcience and uſe of analyſis. The great advantage of the modern mathematics above the ancient is in point of analytics.

Pappus, in the preface to his ſeventh book of Mathematical Collections, enumerates the authors on the ancient analytics; being Euclid, in his *Data* and *Poriſmata*; Apollonius, *de Sectione Rationis*, and in his *Conics*; Ariſtæus, *de Locis Solidis*; and Eratoſthenes, *de Mediis Proportionalibus*. But the ancient analytics were very different from the modern.

To the modern analytics principally belongs algebra; an hiſtorical account of which, with the ſeveral authors thereon, ſee under the article ALGEBRA.

ANAMABOA, a populous town in the kingdom of Fantin, in Guinea. The natives are generally great cheats, and muſt be carefully looked after in dealing with them, and their gold well examined, for it is commonly adulterated. It lies under the cannon of the Engliſh caſtle. The landing is pretty difficult on account of the rocks: and therefore thoſe that come here to trade are forced to go aſhore in canoes. The earth here is very proper to make bricks; the oyſters, when burnt, afford good lime; and there is timber in great abundance; ſo that here are all the materials for building. The country at Anamaboa is full of hills, beginning at a good diſtance from the town, and affording a very pleaſant proſpect. Indian corn and palm-wine are in great plenty. They have a green fruit called *papas*, as big as a ſmall melon, and which has a taſte like cauliflower. Anamaboa is much frequented by the Engliſh ſhips and others for corn and ſlaves, which laſt are ſometimes to be had in great numbers. The Engliſh fort is built on the foundation of a large old houſe, which fell into ruin in 1754. It is a large edifice, flanked by two towers, and fortified towards the land with two baſtions. The walls are of brick and ſtone cemented with lime. It ſtands upon a rock at the diſtance of 30 paces from the ſea. It is mounted with 12 pieces of cannon and 12 ſwivels; and is defended by a garriſon of 12 ſoldiers and a ſerjeant, under the command of the chief factor.

The natives treat the garriſon of this fort with great inſolence, inſomuch as often to block them up, and frequently, if they diſlike the governor, ſend him off in a canoe to Cape Coaſt with marks of the utmoſt contempt. Far from being able to oppoſe them, the Engliſh are glad to obtain their favour with preſents. In 1701, they declared war againſt the Engliſh; and having aſſembled in a tumultuous manner before the fort, they ſet fire to the exterior buildings, and went on with their outrages, till they were diſperſed by a diſcharge of the cannon from the batteries. The night following the Engliſh took their revenge, by ſetting fire to the town of Anamaboa: and thus hoſtilities continued for 20 days, till at laſt the natives were obliged to ſue for peace. This fort was abandoned in 1733; but has been reſumed by the Engliſh, who have continued in it ever ſince.

ANAMELECH, an idol of the Sepharvaites, who are ſaid in Scripture to have burned their children in honour of Adrammelech and Anamelech.—Theſe idols probably ſignified the ſun and moon. Some of the rabbins repreſent Anamelech under the figure of a mule, others under that of a quail or pheaſant.

ANAMIM, the ſecond ſon of Mizraim (Gen. x. 13.) Anamim, if we may credit the paraphraſt Jonathan the ſon of Uzziel, peopled the Mareotis; or the Pentapolis of Cyrene, according to the paraphraſt of Jeruſalem. Bocchart is of opinion, that theſe Anamims were the people that dwelt in the parts adjacent to the temple of Jupiter Ammon, and in the Naſamonitis. Calmet thinks the Amanians and Garamantes to be deſcended from Anamim.

ANAMORPHOSIS, in perſpective drawings, is a deformed or diſtorted portrait or figure, generally confuſed and unintelligible to the common unaſſiſted view; but when ſeen at a certain diſtance and height, or as reflected from a plain or curved mirror, will appear regular and in right proportion. See OPTICS (the *Index*) and PERSPECTIVE.

ANANAS, in *Botany*, the trivial name of a ſpecies of bromelia. See BROMELIA, BOTANY *Index*.

ANANCITIS, in antiquity, a kind of figured ſtone, otherwiſe called *ſynochitis*, celebrated for its magical virtue of raiſing the ſhadows of the infernal gods.

ANANIAS, a Sadducee, high-prieſt of the Jews, who put to death St James the brother of our Lord, and was depoſed by Agrippa.

ANANISAPTA, or ANANISAPTA, a magical word frequently found inſcribed on coins and other amulets, ſuppoſed to have a virtue of preſerving the wearer from the plague.

ANAPÆST, in ancient poetry, a foot conſiſting of two ſhort ſyllables and one long: Such is the word ſcŏpŭlōs. It is juſt the reverſe of the dactyl.

ANAPÆSTIC VERSES, thoſe conſiſting wholly or chiefly of anapæſts.

Anaphe || Anas.

ANAPHE, in *Ancient Geography*, an iſland ſpontaneouſly emerging out of the Cretan ſea, near Thera (Pliny, Strabo); now called *Nanſio*. Its name is from the ſudden appearance of the new moon to the Argonauts in a ſtorm (Apollonius). *Anaphæus*, an epithet of Apollo, who was worſhipped there. *Anaphæi*, the people.

ANAPHORA, in *Rhetoric*, the repetition of the ſame word or words in the beginning of a ſentence or verſe: Thus Virgil,

Pan etiam Arcadia mecum ſe judice certet,
Pan etiam Arcadia dicat ſe judice victum.

Anaphora, among phyſicians, the throwing off purulent matter by the mouth.

ANAPHRODISIA, ſignifies impotence, or want of power to procreate. See Impotence.

ANAPLASIS, ſignifies the replacing or ſetting a fractured bone.

ANAPLORETICS, medicines that promote the growth or granulation of the fleſh in wounds, ulcers, &c.

ANARCHI, (Ανάρχοι,) in antiquity, a name given by the Athenians to four ſupernumerary days in their year, during which they had no magiſtrates. The Attic year was divided into 10 parts, according to the number of tribes, to whom the preſidency of the ſenate fell by turns. Each diviſion conſiſted of 35 days; what remained after the expiration of theſe, to make the lunar year complete, which according to their computation conſiſted of 354 days, were employed in the creation of magiſtrates, and called ανάρχοι ἡμέραι, and ἀρχαιρέσιοι.

ANARCHY, the want of government in a nation, where no ſupreme authority is lodged either in the prince or other rulers; but the people live at large, and all things are in confuſion. The word is derived from the Greek privative α, and ἀρχὴ, *command, principality*. Anarchy is ſuppoſed to have reigned after the deluge, before the foundation of monarchies. We ſtill find it obtain in ſeveral parts, particularly of Africa and America.

Anarchy is alſo applied to certain troubleſome and diſorderly periods, even in governments otherwiſe regular. In England, the period between the death of Cromwell and King Charles's reſtoration is commonly repreſented as an *anarchy*. Every month produced a new ſcheme or form of government. Enthuſiaſts talked of nothing but annulling all the laws, aboliſhing all writings, records, and regiſters, and bringing all men to the primitive level. No modern nation was more ſubject to anarchies than Poland; where every interval between the death of one king and the election of another was a ſcene of great diſorder, ſo that it was a proverb among that people, *Poland is governed by confuſion*. The Jewiſh hiſtory preſents numerous inſtances of anarchies in that ſtate, uſually denoted by this phraſe, that *in thoſe days there was no king in Iſrael, but every man did that which was right in his own eyes*; which is a juſt picture of an *anarchy*.

ANARRHICAS. See Ichthyology *Index*.

ANARROPIA, among phyſicians, a tendency of the humours to the head or ſuperior parts.

ANAS, in *Ancient Geography*, a river of Spain, riſing in the territory of Luminium in the Hither Spain, and now ſpreading into lakes, again reſtraining its waters, or, burrowing itſelf entirely in the earth, is pleaſed often to reappear. It pours into the Atlantic (Pliny). Now *Guadiana*, riſing in the ſouth-eaſt of New Caſtile, in a diſtrict commonly called Campo de Montiel, not far from the mountain Conſuegra, from the lakes called *las Lagunas de Guadiana*, and then it is called *Rio Roydera;* and, after a courſe of ſix leagues, burying itſelf in the earth for a league, it then riſes up again from three lakes, called *los Ojos de Guadiana*, near the village Villa Harta, five leagues to the north of Calatrava, and directs its courſe weſtward through New Caſtile, by Medelin, Merida, and Badajoz, where it begins to bend its courſe ſouthwards, between Portugal and Andaluſia, falling into the bay of Cadiz near Ayamonte.

Anas || Anaſtaſius.

Anas. See Ornithology *Index*.

ANASARCA, a ſpecies of dropſy. See Medicine *Index*.

ANASSER. See Botany *Index*.

ANASSUS, or Anaxus, in *Ancient Geography*, a river in the territory of Venice, (Pliny); now the *Piave*, which riſing from the mountains of Tyrol, not far from the borders of Carinthia, runs from north to ſouth, through the territories of Cadorina, Belluno, Feltre, and, after running from weſt to eaſt, through Trevigi, falls into the Adriatic, 13 miles to the ſouth-eaſt of Venice.

ANASTATICA. See Botany *Index*.

ANASTASIS, a term among ancient phyſicians, for a riſing up to go to ſtool. It alſo ſignifies the paſſage of any humour, when expelled from one part, and obliged to remove to another.

ANASTASIUS I. emperor of the eaſt, ſucceeded Zeno in the year 491, and was inaugurated that ſame year on April the 11th. The Manicheans and Arians were greatly in hopes of being ſupported by the new emperor; the former becauſe his mother was their friend, and favoured their ſect; the latter becauſe the emperor's uncle was of their opinion: but if Anaſtaſius did not perſecute them (as we do not find he ever did), yet it does not appear that he ſupported either of theſe ſects. But in order to maintain the peace of the church, upon which the tranquillity of the ſtate very much depends, he declared, that ſuch biſhops or other clergymen who ſhould diſturb the public tranquillity, by maintaining with too much heat either ſide of the queſtion for or againſt the council of Chalcedon, ſhould be deprived of their benefices. Accordingly the diſputes concerning Eutychianiſm running to a very great height, and Euphemius being deeply concerned in them, the emperor expelled him from his ſee, and choſe Macedonius in his ſtead. The hatred which the different parties entertained againſt one another occaſioned often ſuch tumults and ſeditions at Conſtantinople as threatened the life of the emperor himſelf; who, to keep the people in awe, ordered that the governor of the city ſhould be preſent at all church aſſemblies and public proceſſions. This was ſo much the more neceſſary, becauſe theſe tumults were chiefly occaſioned by a kind of doxology or ſhort hymn which uſed to be ſung at divine ſervice. This doxology conſiſted only of the following words, ἁγιος ὁ Θεος, ἁγιος ἰσχυρος, ἁγιος ἀθανατος, that is, "Holy God, holy the powerful, holy the immortal;" for which reaſon it was called

Anaſtaſius. called τρισαγιος, *Trifagius*, "three times holy;" becauſe the word *holy* was therein three times repeated. The orthodox uſed to ſing that hymn without any addition, or by adding only to it, αγια τρισι, ελεησον ημας, i. e. "Holy Trinity, have mercy upon us:" But Peter the Fuller, biſhop of Antioch, pretended to add theſe words to it, viz. ὁ σταυρωθεις δι ημας, i. e. "who haſt been crucified for us;" and as it was ſuppoſed that the firſt holy related to the Father, the ſecond to the Son, the third to the Holy Ghoſt, the adding theſe words, *who haſt been crucified for us*, ſeemed to inſinuate that the whole conſubſtantial Trinity had ſuffered; for which reaſon the orthodox were reſolved not to admit this addition. Anaſtaſius deſiring to have theſe fatal words added to that hymn whenever it ſhould be ſung at Conſtantinople, this occaſioned a terrible ſedition in the city, as though the very fundamentals of Chriſtianity had been overthrown. Macedonius and his clergy are ſaid to have raiſed that ſedition, which came to ſuch a height, that the emperor himſelf was obliged to come, without his crown on his head, and in a very humble manner, to the circus, where he declared to the people that he was very willing to quit the imperial throne; but he told them at the ſame time, that they could not all enjoy the ſovereign power, which does not admit of a partnerſhip: and that one perſon ſtill muſt govern them if he reſigned the crown. This diſcourſe had ſuch a power over the raging multitude, that, as if they had been divinely inſpired, they immediately requeſted the emperor to take up his crown, promiſing that they would be quiet and obedient for the future. Anaſtaſius is by the Popiſh writers repreſented as a great perſecutor of the orthodox, becauſe he baniſhed and deprived Euphemius and Macedonius; but they ſhould prove that theſe two prelates had been unjuſtly baniſhed, which is a very hard taſk. As to his civil government, it is confeſſed that at the beginning of his reign he ſhowed himſelf a very good prince: he eaſed the people of a very heavy tax called *Chryſargyrum*, under which they had groaned for a long time; he prohibited the fighting with wild beaſts; he raiſed ſeveral buildings; and avoided being involved in dangerous wars as much as lay in his power. Anaſtaſius reigned 27 years three months and three days, or, according to F. Pagi, wanting three days; and died July the 10th, A. C. 518, in the 88th year of his age.

Anaſtaſius II. whoſe proper name was *Artemius*, was in the year 713 elevated to the throne of Conſtantinople, from the low ſtation of a ſecretary, by the free voice of the ſenate and Roman people. His natural talents, improved by education and daily exertion, enabled him to manage with great prudence the affairs of the empire during the time that he was ſecretary to his predeceſſor Philippicus. The Saracens had made inroads upon Aſia Minor, in the beginning of his reign; but he ſent a ſtrong army to the frontiers of Syria for its protection, under the command of Leo the Iſaurian, a man of great military experience. Theſe enemies of the empire alſo meditated the deſign of taking Conſtantinople; but the vigilance of Anaſtaſius defeated their purpoſe, by providing a formidable naval force, repairing and ſtrengthening the walls of the city, and by forcing all the inhabitants either to provide themſelves with proviſions for three years, or inſtantly to depart from the city. Diſappointed in their deſign, the enemy's fleet ſailed to Phrygia, and the imperial fleet ſtill anchored at Rhodes to watch the motions of the enemy. But the meaſures of the emperor received a ſevere check from the conduct of the ſailors, who raiſed a mutiny, and ſlew their admiral for no other cauſe but his honourable endeavours to maintain proper diſcipline in the fleet. Juſtly dreading ſevere puniſhment, the ſeamen raiſed the ſtandard of rebellion, declared Anaſtaſius unworthy to reign, and conferred the purple upon one Theodoſius, a perſon of mean birth.

Informed of this ſedition, Anaſtaſius fled from his tottering throne to Nice. The new emperor haſtened to beſiege Conſtantinople, which, after a feeble defence of ſix months, he reduced to his ſubjection. The late emperor being aſſured of his life, abandoned his claim to the crown, aſſumed the character of a monk, and was baniſhed to Theſſalonica, having worn the purple only during the ſpace of two years. Having, however, prevailed upon the Bulgarians to eſpouſe his cauſe, he laid aſide the habit of the monk for that of the warrior, and in the year 719, in the time of the emperor Leo, he reſumed his claim to the throne. A numerous army of theſe barbarians haſtened to the capital; but, being unable to reduce it, they delivered up the unhappy Anaſtaſius to the emperor, who put him to death along with his principal aſſociates. (*Anc. Un. Hiſt.*)

Anastasius, furnamed *Bibliothecarius*, a Roman abbot, library-keeper of the Vatican, and one of the moſt learned men of the ninth century, aſſiſted in 869 at the fourth general council, the acts and canons of which he tranſlated from the Greek into Latin. He alſo compoſed the lives of ſeveral popes, and other works; the beſt edition of which is that of the Vatican.

ANASTATICA, the rose of Jericho. See Botany *Index*.

ANASTOMOSIS, in *Anatomy*, the opening of the mouths of veſſels, in order to diſcharge their contained fluids. It is likewiſe uſed for the communication of two veſſels at their extremities; as the inoſculation of a vein with a vein, of an artery with an artery, or of an artery with a vein.

ANASTOMATICS, medicines ſuppoſed to have the power of opening the mouths of the veſſels, and promoting the circulation; ſuch as deobſtruent, cathartic, and ſudoriſic medicines.

ANASTROPHE, in *Rhetoric* and *Grammar*, denotes the inverſion of the natural order of the words: ſuch is, *ſava per et leonibus*, for *per ſava et leonibus*.

ANASUS, or Anisus, in *Ancient Geography*, now the *Ens*, a river of Germany; which riſes on the borders of the territory of Saltzburg; then ſeparating Upper Stiria from Upper Auſtria, and waſhing the town of Ens, falls, at the diſtance of a mile below it, into the Danube, in a courſe from ſouth to north.

ANATHEMA, among eccleſiaſtical writers, imports whatever is ſet apart, ſeparated, or divided; but is moſt uſually meant to expreſs the cutting off a perſon from the privileges of ſociety and communion with the faithful.

The anathema differs from excommunication in the circumſtances of being attended with curſes and execrations. It was practiſed in the primitive church againſt notorious offenders; and the form of that pronounced

Anathema

nounced by Synecius againſt one Andronicus is as follows: "Let no church of God be open to Andronicus, but let every ſanctuary be ſhut againſt him. I admoniſh both private men and magiſtrates to receive him neither under their roof nor to their table; and prieſts more eſpecially, that they neither converſe with him living, nor attend his funeral when dead."

Several councils alſo have pronounced anathemas againſt ſuch as they thought corrupted the purity of the following form: *Si quis dixerit, &c. anathema ſit.*

There are two kinds of anathemas, the one judiciary and the other abjuratory. The former can only be denounced by a council, a pope, or a biſhop; the latter makes a part of the ceremony of abjuration, the convert being obliged to anathematize the hereſy he abjures.

ANATHEMA, in heathen antiquity, was an offering or preſent made to ſome deity, and hung up in the temple. Whenever a perſon left off his employment, it was uſual to dedicate the tools to the patron deity of the trade. Perſons too who had eſcaped from imminent danger, as ſhipwreck and the like, or had met with any other remarkable inſtance of good fortune, feldom failed to teſtify their gratitude by ſome preſent of this kind.

Anathoth || Anatolia.

ANATHOTH, a hamlet of Paleſtine, very near Jeruſalem (Joſephus), about three miles and a half to the north; the ruins of which are ſtill to be ſeen. It was the birthplace of the prophet Jeremiah, and one of the Levitical towns in the tribe of Benjamin.

ANATIFERA CONCHA, the trivial name of a ſpecies of lepas. See LEPAS, CONCHOLOGY *Index*.

ANATOCISM, ANATOCISMUS, an uſurious contract, wherein the intereſts ariſing from the principal ſum are added to the principal itſelf, and intereſt exacted upon the whole. The word is originally Greek, but uſed by Cicero in Latin; whence it has deſcended into moſt other languages. It comes from the preposition ανα, which in compoſition ſignifies *repetition* or *duplication*, and τοκος, *uſury*. Anatocism is what we properly call *intereſt upon intereſt*, or *compound intereſt*. This is the worſt kind of uſury, and has been ſeverely condemned by the Roman law, as well as by the common laws of moſt other countries. See INTEREST.

ANATOLIA. See NATOLIA.

ANATOMY,

History.

IN its moſt general ſenſe, is the art of diſſecting, or artificially ſeparating and taking to pieces the different parts of organized bodies, in order to an exact diſcovery of their ſituation, ſtructure, and economy; but here we limit its ſignification to animal bodies. The word is Greek, ανατομη; derived from ανατεμνω, to diſſect, or ſeparate by cutting.

INTRODUCTION.

§ 1. *Hiſtory of Anatomy.*

THIS art ſeems to have been very ancient; though, for a long time, known only in an imperfect manner. —The firſt men who lived muſt have ſoon acquired ſome notions of the ſtructure of their own bodies, particularly of the external parts, and of ſome even of the internal, ſuch as bones, joints, and ſinews, which are expoſed to the examination of the ſenſes in living bodies.

This rude knowledge muſt have been gradually improved, by the accidents to which the body is expoſed, by the neceſſities of life, and by the various cuſtoms, ceremonies, and ſuperſtitions, of different nations. Thus, the obſervance of bodies killed by violence, attention to wounded men, and to many diſeaſes, the various ways of putting criminals to death, the funeral ceremonies, and a variety of ſuch things, muſt have ſhown men every day more and more of themſelves; eſpecially as curioſity and ſelf-love would here urge them powerfully to obſervation and reflection.

The brute creation having ſuch an affinity to man in outward form, motion, ſenſes, and ways of life; the generation of the ſpecies, and the effect of death upon the body, being obſerved to be ſo nearly the ſame in both; the concluſion was not only obvious, but unavoidable, that their bodies were formed nearly upon the ſame model. And the opportunities of examining the bodies of brutes were ſo eaſily procured, indeed ſo neceſſarily occurred in the common buſineſs of life, that the huntſman in making uſe of his prey, the prieſt in ſacrificing, the augur in divination, and above all, the butcher, or thoſe who might out of curioſity attend upon his operations, muſt have been daily adding to the little ſtock of anatomical knowledge. Accordingly we find, in fact, that the South ſea iſlanders, who have been left to their own obſervation and reaſoning, without the aſſiſtance of letters, have yet a conſiderable ſhare of rude or wild anatomical and phyſiological knowledge. Dr Hunter informs us, that when Omai was in his muſeum with Mr Banks, though he could not explain himſelf intelligibly, they plainly ſaw that he knew the principal parts of the body, and ſomething likewiſe of their uſes; and manifeſted a great curioſity or deſire of having the functions of the internal parts of the body explained to him; particularly the relative functions of the two ſexes, which with him ſeemed to be the moſt intereſting object of the human mind. History.

We may further imagine, that the philoſophers of the moſt early ages, that is, the men of curioſity, obſervation, experience, and reflection, could not overlook an inſtance of natural organization, which was ſo intereſting, and at the ſame time ſo wonderful, more eſpecially ſuch of them as applied to the ſtudy and cure of diſeaſes. We know that phyſic was a branch of philoſophy till the age of Hippocrates.

Thus the art muſt have been circumſtanced in its beginning. We ſhall next ſee from the teſtimony of hiſtorians

History. hiſtorians and other writers, how it actually appeared as an art, from the time that writing was introduced among men; how it was improved, and conveyed down to us through a long ſeries of ages.

Civilization, and improvements of every kind, would naturally begin in fertile countries and healthful climates, where there would be leiſure for reflection, and an appetite for amuſement. Accordingly, writing, and many other uſeful and ornamental inventions and arts, appear to have been cultivated in the eaſtern parts of Aſia long before the earlieſt times that are treated of by the Greek or other European writers; and that the arts and learning of thoſe eaſtern people were in ſubſequent times gradually communicated to adjacent countries, eſpecially by the medium of trade. The cuſtoms, ſuperſtitions, and climate of eaſtern countries, however, appear to have been as unfavourable to practical anatomy as they were inviting to the ſtudy of aſtronomy, geometry, poetry, and all the ſofter arts of peace.

Animal bodies there run ſo quickly into nauſeous putrefaction, that the early inhabitants muſt have avoided ſuch offenſive employments as anatomical inquiries, like their poſterity at this day. And in fact it does not appear, by the writings of the Grecians, or Jews, or Phœnicians, or of other eaſtern countries, that anatomy was particularly cultivated by any of thoſe eaſtern nations. In tracing it backwards to its infancy, we cannot go farther into antiquity than the times of the Grecian philoſophers. As an art in the ſtate of ſome cultivation, it may be ſaid to have been brought forth and bred up among them as a branch of natural knowledge.

The era of philoſophy, as it was called, began with Thales the Mileſian being declared, by a very general conſent of the people, the moſt wiſe of all the Grecians, 480 years before Chriſt. The philoſophers of his ſchool, which was called the Ionian, cultivated principally natural knowledge. Socrates, the ſeventh in ſucceſſion of their great teachers, introduced the ſtudy of morals, and was thence ſaid to bring down philoſophy from heaven, to make men truly wiſe and happy.

In the writings of his ſcholar and ſucceſſor Plato, we ſee that the philoſophers had carefully conſidered the human body, both in its organization and functions; and though they had not arrived at the knowledge of the more minute and intricate parts, which required the ſucceſſive labour and attention of many ages, they had made up very noble and comprehenſive ideas of the ſubject in general. The anatomical deſcriptions of Xenophon and Plato have had the honour of being quoted by Longinus (§ xxxii.) as ſpecimens of ſublime writing; and the extract from Plato is ſtill more remarkable for its containing the rudiments of the circulation of the blood. "The heart (ſays Plato) is the centre or knot of the blood-veſſels, the ſpring or fountain of the blood, which is carried impetuouſly round; the blood is the *pabulum* or food of the fleſh; and for the purpoſe of nouriſhment, the body is laid out into canals, like thoſe which are drawn through gardens, that the blood may be conveyed, as from a fountain, to every part of the pervious body."

Hippocrates was nearly contemporary with the great philoſophers of whom we have been ſpeaking, about 420 years before the Chriſtian æra. He is ſaid to History. have ſeparated the profeſſion of phyſic, by and phyſic, and to have been the firſt who applied to phyſic alone as the ſubject of his life. He is likewiſe generally ſuppoſed to be the firſt who wrote upon anatomy. We know of nothing that was written expreſſly upon the ſubject before: and the firſt anatomical diſſection which has been recorded was made by his friend Democritus of Abdera.

If, however, we read the works of Hippocrates with impartiality, and apply his accounts of the parts to what we know of the human body, we muſt allow his deſcriptions to be imperfect, incorrect, ſometimes extravagant, and often unintelligible, that of the bones only excepted. He ſeems to have ſtudied them with more ſucceſs than the other parts, and tells us that he had an opportunity of ſeeing a human ſkeleton.

From Hippocrates to Galen, who flouriſhed towards the end of the ſecond century, in the decline of the Roman empire, that is, in the ſpace of 600 years, anatomy was greatly improved; the philoſophers ſtill conſidering it as a moſt curious and intereſting branch of natural knowlege, and the phyſicians as a principal foundation of their art. Both of them, in that interval of time, contributed daily to the common ſtock, by more accurate and extended obſervations, and by the lights of improving philoſophy.

As theſe two great men had applied very particularly to the ſtudy of animal bodies, they not only made great improvements, eſpecially in phyſiology, but raiſed the credit of natural knowledge, and ſpread it as wide as Alexander's empire.

Few of Ariſtotle's writings were made public in his lifetime. He affected to ſay that they would be unintelligible to thoſe who had not heard them explained at his lectures; and, except the uſe which Theophraſtus made of them, they were loſt to the public for above 130 years after the death of Theophraſtus; and at laſt came out defective from bad preſervation, and corrupted by men, who, without proper qualifications, preſumed to correct and to ſupply what was loſt.

From the time of Theophraſtus, the ſtudy of natural knowledge at Athens was for ever on the decline; and the reputation of the Lycæum and Academy was almoſt confined to the ſtudies which are ſubſervient to oratory and public ſpeaking.

The other great inſtitution for Grecian education was at Alexandria in Egypt. The firſt Ptolemies, both from their love of literature, and to give true and permanent dignity to their empire, and to Alexander's favourite city, ſet up a grand ſchool in the palace itſelf, with a muſeum and a library, which, we may ſay, has been the moſt famed in the world. Anatomy among other ſciences, was publicly taught; and the two diſtinguiſhed anatomiſts were Eraſiſtratus the pupil and friend of Theophraſtus, and Herophilus. Their voluminous works are all loſt; but they are quoted by Galen almoſt in every page. Theſe profeſſors were probably the firſt who were authorized to diſſect human bodies; a peculiarity which marks ſtrongly the philoſophical magnanimity of the firſt Ptolemy, and fixes a great era in the hiſtory of anatomy. And it was, no doubt, from this particular advantage which the Alexandrians had above all others, that their ſchool not only gained, but for many centuries preſerved, the firſt repu-

tation.

History. tation for medical education. Ammianus Marcellinus, who lived about 650 years after the ſchools were ſet up, ſays, they were in his time, that it was enough to ſecure credit to any phyſician if he could ſay that he had ſtudied at Alexandria.

Herophilus has been ſaid to have anatomized 700 bodies. We muſt allow for exaggeration. Nay, it was ſaid, that both he and Eraſiſtratus made it a common practice to open living bodies, that they might diſcover the more ſecret ſprings of life. But this, no doubt, was only a vulgar opinion, riſing from the prejudices of mankind; and accordingly, without any good reaſon, ſuch tales have been told of modern anatomiſts, and have been believed by the vulgar.

Among the Romans, though it is probable they had phyſicians and ſurgeons from the foundation of the city, yet we have no account of any of theſe applying themſelves to anatomy for a very long time. Archagathus was the firſt Greek phyſician eſtabliſhed in Rome, and he was baniſhed the city on account of the ſeverity of his operations.—Aſclepiades, who flouriſhed in Rome 101 years after Archagathus, in the time of Pompey, attained ſuch a high reputation as to be ranked in the ſame claſs with Hippocrates. He ſeemed to have ſome notion of the air in reſpiration acting by its weight; and in accounting for digeſtion, he ſuppoſed the food to be no farther changed than by a comminution into extremely ſmall parts, which being diſtributed to the ſeveral parts of the body, is aſſimilated to the nature of each. One Caſſius, commonly thought to be a diſciple of Aſclepiades, accounted for the right ſide of the body becoming paralytic on hurting the left ſide of the brain in the ſame manner as has been done by the moderns, viz. from the croſſing of the nerves from the right to the left ſide of the brain.

From the time of Aſclepiades to the ſecond century, phyſicians ſeem to have been greatly encouraged at Rome; and in the writings of Celſus, Rufus, Pliny, Cœlius Aurelianus, and Aræteus, we find ſeveral anatomical obſervations, but moſtly very ſuperficial and inaccurate. Towards the end of the ſecond century lived Claudius Galenus Pergamus, whoſe name is ſo well known in the medical world. He applied himſelf particularly to the ſtudy of anatomy, and did more in that way than all that went before him. He ſeems, however, to have been at a great loſs for human ſubjects to operate upon: and therefore his deſcriptions of the parts are moſtly taken from brute animals. His works contain the fulleſt hiſtory of anatomiſts, and the moſt complete ſyſtem of the ſcience, to be met with anywhere before him, or for ſeveral centuries after; ſo that a number of paſſages in them were reckoned abſolutely unintelligible for many ages, until explained by the diſcoveries of ſucceeding anatomiſts.

About the end of the fourth century, Nimeſius biſhop of Emiſſa wrote a treatiſe on the nature of man, in which it is ſaid were contained two celebrated modern diſcoveries; the one, the uſes of the bile, boaſted of by Sylvius de la Boe; and the other, the circulation of the blood. This laſt, however, is proved by Dr Freind, in his Hiſtory of Phyſic, p. 229. to be falſely aſcribed to this author.

The Roman empire beginning now to be oppreſſed by the barbarians, and ſunk in groſs ſuperſtition, learning of all kinds decreaſed; and when the empire was totally overwhelmed by thoſe barbarous nations, every appearance of ſcience was almoſt extinguiſhed in Europe. The only remains of it were among the Arabians in Spain and in Aſia.—The Saracens, who came into Spain, deſtroyed at firſt all the Greek books which the Vandals had ſpared: but though their government was in a conſtant ſtruggle and fluctuation during 800 years before they were driven out, they received a taſte for learning from their countrymen of the eaſt; ſeveral of their princes encouraged liberal ſtudies; public ſchools were ſet up at Cordova, Toledo, and other towns, and tranſlations of the Greeks into the Arabic were univerſally in the hands of their teachers. History.

Thus was the learning of the Grecians transferred to the Arabians. But though they had ſo good a foundation to build upon, this art was never improved while they were maſters of the world: for they were ſatisfied with commenting upon Galen; and ſeem to have made no diſſection of human bodies.

Abdollatiph, who was himſelf a teacher of anatomy, a man eminent in his time (at and before 1202) for his learning and curioſity; a great traveller, who had been bred at Bagdad, and had ſeen many of the great cities and principal places for ſtudy in the Saracen empire; who had a favourable opinion of original obſervation, in oppoſition to book learning; who boldly corrected ſome of Galen's errors, and was perſuaded that many more might be detected: this man, we ſay, never made or ſaw, or ſeemed to think of a human diſſection. He diſcovered Galen's errors in the oſteology, by going to burying grounds, with his ſtudents and others, where he examined and demonſtrated the bones; he earneſtly recommended that method of ſtudy, in preference even to the reading of Galen, and thought that many farther improvements might be made; yet he ſeemed not to have an idea that a freſh ſubject might be diſſected with that view.

Perhaps the Jewiſh tenets which the Mahometans adopted about uncleanneſs and pollution, might prevent their handling dead bodies; or their opinion of what was ſuppoſed to paſs between an angel and the dead perſon, might make them think diſturbing the dead highly ſacrilegious. Such however, as Arabian learning was, for many ages together there was hardly any other in all the weſtern countries of Europe. It was introduced by the eſtabliſhment of the Saracens in Spain in 711, and kept its ground till the reſtoration of learning in the end of the 15th century. The ſtate of anatomy in Europe, in the times of Arabian influence, may be ſeen by reading a very ſhort ſyſtem of anatomy drawn up by Mundinus, in the year 1315. It was extracted principally from what the Arabians had preſerved of Galen's doctrine; and, rude as it is, in that age it was judged to be ſo maſterly a performance, that it was ordered by a public decree, that it ſhould be read in all the ſchools of Italy; and it actually continued to be almoſt the only book which was read upon the ſubject for above 200 years. Corteſius gives him the credit of being the great reſtorer of anatomy, and the firſt who diſſected human bodies among the moderns.

A general prejudice againſt diſſection, however, prevailed till the 16th century. The emperor Charles V. ordered a conſultation to be held by the divines of Salamanca, in order to determine whether or not it was

lawful

History. lawful in point of conſcience to diſſect a dead body. In Muſcovy, till very lately, both anatomy and the uſe of ſkeletons were forbidden; the firſt as inhuman, and the latter as ſubſervient to witchcraft.

In the beginning of the 15th century, learning revived conſiderably in Europe, and particularly phyſic, by means of copies of the Greek authors brought from the ſack of Conſtantinople; after which the number of anatomiſts and anatomical books increaſed to a prodigious degree.—The Europeans becoming thus poſſeſſed of the ancient Greek fathers of medicine, were for a long time ſo much occupied in correcting the copies they could obtain, ſtudying the meaning, and commenting upon them, that they attempted nothing of their own, eſpecially in anatomy.

And here the late Dr Hunter introduces into the annals of this art, a genius of the firſt rate, Leonardo da Vinci, who had been formerly overlooked, becauſe he was of another profeſſion, and becauſe he publiſhed nothing upon the ſubject. He is conſidered by the Doctor as by far the beſt anatomiſt and phyſiologiſt of his time: and was certainly the firſt man we know of who introduced the practice of making anatomical drawings.

Vaſſare, in his Lives of the Painters, ſpeaks of Leonardo thus, after telling us that he had compoſed a book of the anatomy of a horſe, for his own ſtudy: "He afterwards applied himſelf with more diligence to the human anatomy; in which ſtudy he reciprocally received and communicated aſſiſtance to Marc. Antonio della Torre, an excellent philoſopher, who then read lectures in Pavia, and wrote upon this ſubject; and who was the firſt, as I have heard, who began to illuſtrate medicine from the doctrine of Galen, and to give true light to anatomy, which till that time had been involved in clouds of darkneſs and ignorance. In this he availed himſelf exceedingly of the genius and labour of Leonardo, who made a book of figures, drawn with red chalk, and touched with a pen, with great diligence, of ſuch objects as he had himſelf diſſected; where he made all the bones, and to thoſe he joined, in their order, all the nerves, and covered them with the muſcles. And concerning thoſe, from part to part, he wrote remarks in letters of an ugly form, which are written by the left hand, backwards, and not to be underſtood but by thoſe who know the method of reading them; for they are not to be read without a looking-glaſs. Of theſe papers of the human anatomy, there is a great part in the poſſeſſion of M. Franceſco da Melzo, a Milaneſe gentleman, who, in the time of Leonardo, was a moſt beautiful boy, and much beloved by him, as he is now a beautiful and genteel old man, who reads thoſe writings, and carefully preſerves them, as precious relics, together with the portrait of Leonardo of happy memory. It appears impoſſible that that divine ſpirit ſhould reaſon ſo well upon the arteries, and muſcles, and nerves, and veins; and with ſuch diligence of every thing," &c. &c.

Thoſe very drawings and the writings are happily found to be preſerved in his majeſty's great collection of original drawings, where the Doctor was permitted to examine them; and his ſentiments upon the occaſion he thus expreſſes: "I expected to ſee little more than ſuch deſigns in anatomy as might be uſeful to a painter in his own profeſſion; but I ſaw, and indeed with aſtoniſhment, that Leonardo had been a great and a deep ſtudent. When I conſider what pains he has taken upon every part of the body, the ſuperiority of his univerſal genius, his particular excellence in mechanics and hydraulics, and the attention with which ſuch a man would examine and [illegible] which he was to draw, I am fully perſuaded that Leonardo was the beſt anatomiſt at that time in the world. We muſt give the 15th century the credit of Leonardo's anatomical ſtudies, as he was 55 years of age at the cloſe of that century."

In the beginning of the 16th century, Vefalius and Benedictus, but particularly Berengarius and Maſſa, followed out the improvement of anatomy in Italy, where they taught it, and publiſhed upon the ſubject. Theſe firſt improvers made ſome diſcoveries from their own diſſections: but it is not ſurpriſing that they ſhould have been diffident of themſelves, and have followed Galen almoſt blindly, when his authority had been ſo long eſtabliſhed, and when the enthuſiaſm for Greek authors was riſing to ſuch a pitch.

Soon after this, we may ſay about the year 1540, the great Veſalius appeared. He was ſtudious, laborious, and ambitious. From Bruſſels, the place of his birth, he went to Louvain, and thence to Paris, where anatomy was not yet making a conſiderable figure; and then to Louvain to teach; from which place, very fortunately for his reputation, he was called to Italy, where he met with every opportunity that ſuch a genius for anatomy could deſire, that is, books, ſubjects, and excellent draughtſmen. He was equally laborious in reading the ancients, and in diſſecting bodies. And in making the compariſon, he could not but ſee, that there was great room for improvement, and that many of Galen's deſcriptions were erroneous. When he was but a young man, he publiſhed a noble ſyſtem of anatomy, illuſtrated with a great number of elegant figures.—In this work he found ſo many occaſions of correcting Galen, that his contemporaries, partial to antiquity, and jealous of his reputation, complained that he carried his turn for improvement and criticiſms to licentiouſneſs. The ſpirit of oppoſition and emulation was preſently rouſed; and Sylvius in France, Columbus, Fallopius, and Euſtachius in Italy, who were all in high anatomical reputation about the middle of this 16th century, endeavoured to defend Galen at the expence of Veſalius. In their diſputes they made their appeals to the human body: and thus in a few years the art was greatly improved. And Veſalius being detected in the very fault which he condemns in Galen, to wit, deſcribing from the diſſections of brutes, and not of the human body, it expoſed ſo fully that blunder of the older anatomiſts, that in ſucceeding times there has been little reaſon for ſuch complaint.—Beſides the above, he publiſhed ſeveral other anatomical treatiſes. He has been particularly ſerviceable by impoſing names on the muſcles, moſt of which are retained to this day. Formerly they were diſtinguiſhed by numbers, which were differently applied by almoſt every author.

In 1561, Gabriel Fallopius, profeſſor of anatomy at Padua, publiſhed a treatiſe of anatomy under the title of *Obſervationes Anatomicæ*. This was deſigned as a ſupplement to Veſalius; many of whoſe deſcriptions he corrects, though he always makes mention of him in

History. in an honourable manner. Fallopius made many great discoveries, and his book is well worth the perusal of every anatomist.

In 1563. Bartholomæus Eustachius published his *Opuscula Anatomica* at Venice, which have ever since been justly admired for the exactness of the descriptions, and the discoveries contained in them. He published afterwards some other pieces, in which there is little of anatomy; but never published the great work he had promised, which was to be adorned with copperplates representing all the parts of the human body. These plates, after lying buried in an old cabinet for upwards of 150 years, were at last discovered and published in the year 1714, by Lancisi the pope's physician; who added a short explicatory text, because Eustachius's own writing could not be found.

From this time the study of anatomy gradually diffused itself over Europe: insomuch that for the last hundred years it has been daily improving by the labour of a number of professed anatomists almost in every country of Europe.

We may form a judgment about the state of anatomy even in Italy, in the beginning of the 17th century, from the information of Cortesius. He had been professor of anatomy at Bologna, and was then professor of medicine at Massana; where, though he had a great desire to improve himself in the art, and to finish a treatise which he had begun on practical anatomy, in 24 years he could twice only procure an opportunity of dissecting a human body, and then it was with difficulties and in hurry; whereas he had expected to have done so, he says, *once every year, according to the custom in the famous academies of Italy.*

In the very end of the 16th century, our great Harvey, as was the custom of the times, went to Italy to study medicine; for Italy was still the favourite seat of the arts: And in the very beginning of the 17th century, soon after Harvey's return to England, his master in anatomy, Fabricius ab Aquapendente, published an account of the valves in the veins, which he had discovered many years before, and no doubt taught in his lectures when Harvey attended them.

This discovery evidently affected the established doctrine of all ages, that the veins carried the blood from the liver to all parts of the body for nourishment. It set Harvey to work upon the use of the heart and vascular systems in animals; and in the course of some years he was so happy as to discover, and to prove beyond all possibility of doubt, the *circulation of the blood.* He taught his new doctrine in his lectures about the year 1616, and printed it in 1628.

It was by far the most important step that has been made in the knowledge of animal bodies in any age. It not only reflected useful lights upon what had been already found out in anatomy, but also pointed out the means of further investigation. And accordingly we see, that from Harvey to the present time, anatomy has been so much improved, that we may reasonably question if the ancients have been further outdone by the moderns in any other branch of knowledge. From one day to another there has been a constant succession of discoveries, relating either to the structure or functions of our bodies; and new anatomical processes, both of investigation and demonstration, have been daily invented. Many parts of the body which were not known in Harvey's time have since then been brought to light: and of those which were known, the internal composition and functions remained unexplained; and indeed must have remained inexplicable without the knowledge of the circulation. History.

Harvey's doctrine at first met with considerable opposition; but in the space of about 20 years it was so generally and so warmly embraced, that it was imagined every thing in physic would be explained. But time and experience have taught us, that we still are, and probably must long continue to be, very ignorant; and that in the study of the human body, and of its diseases, there will always be an extensive field for the exercise of sagacity.

After the discovery and knowledge of the circulation of the blood, the next question would naturally have been about the passage and route of the nutritious part of the food or chyle from the bowels to the blood vessels: And, by good fortune, in a few years after Harvey had made his discovery, Asellius, an Italian physician, found out the lacteals, or vessels which carry the chyle from the intestines; and printed his account of them, with coloured prints, in the year 1627, the very year before Harvey's book came out.

For a number of years after these two publications, the anatomists in all parts of Europe were daily opening living dogs, either to see the lacteals or to observe the phenomena of the circulation. In making an experiment of this kind, Pecquet in France was fortunate enough to discover the thoracic duct, or common trunk of all the lacteals, which conveys the chyle into the subclavian vein. He printed his discovery in the year 1651. And now the lacteals having been traced from the intestines to the thoracic duct, and that duct having been traced to its termination in a blood vessel, the passage of the chyle was completely made out.

The same practice of opening living animals furnished occasions of discovering the lymphatic vessels. This good fortune fell to the lot of Rudbec first, a young Swedish anatomist; and then to Thomas Bartholine, a Danish anatomist, who was the first who appeared in print upon the lymphatics. His book came out in the year 1653, that is, two years after that of Pecquet. And then it was very evident that they had been seen before by Dr Highmore and others, who had mistaken them for lacteals. But none of the anatomists of those times could make out the origin of the lymphatics, and none of the physiologists could give a satisfactory account of their use.

The circulation of the blood and the passage of the chyle having been satisfactorily traced out in full grown animals, the anatomists were naturally led next to consider how these animal processes were carried on in the child while in the womb of the mother. Accordingly the male and female organs, the appearances and contents of the pregnant uterus, the incubated egg, and every phenomenon which could illustrate generation, became the favourite subject for about 30 years with the principal anatomists of Europe.

Thus it would appear to have been in theory; but Dr Hunter believes, that in fact, as Harvey's master Fabricius laid the foundation for the discovery of the circulation of the blood by teaching him the valves of the veins, and thereby inviting him to consider that subject; so Fabricius, by his lectures, and by his ele-

gant

History. gant work *De Formato Fœtu, et de Formatione Ovi et Pulli*, probably made that likewiſe a favourite ſubject with Dr Harvey. But whether he took up the ſubject of generation in conſequence of his diſcovery of the circulation, or was led to it by his honoured maſter Fabricius, he ſpent a great deal of his time in the inquiry; and publiſhed his obſervations in a book *De Generatione Animalium*, in the year 1651, that is, ſix years before his death.

In a few years after this, Swammerdam, Van Horn, Steno, and D. Graaf, excited great attention to the ſubject of generation, by their ſuppoſed diſcovery that the females of viviparous animals have ovaria, that is, cluſters of eggs in their loins, like oviparous animals; which, when impregnated by the male, are conveyed into the uterus: ſo that a child is produced from an egg as well as a chick; with this difference, that one is hatched within, and the other without, the body of the mother.

Malpighi, a great Italian genius, ſome time after, made conſiderable advances upon the ſubject of generation. He had the good fortune to be the firſt who uſed magnifying glaſſes with addreſs in tracing the firſt appearances in the formation of animals. He likewiſe made many other obſervations and improvements in the *minutiæ* of anatomy by his microſcopical labours, and by cultivating comparative anatomy.

This diſtinguiſhed anatomiſt gave the firſt public ſpecimen of his abilities by printing a diſſertation on the lungs, *anno* 1661, a period ſo remarkable for the ſtudy of nature, that it would be injuſtice to paſs it without particular notice.

At the ſame time flouriſhed Laurentius Bellinus at Florence, and was the firſt who introduced mathematical reaſoning in phyſic. In 1662, Simon Pauli publiſhed a treatiſe *De albandis Oſſibus*. He had long been admired for the white ſkeletons he prepared; and at laſt diſcovered his method, which was by expoſing the bones all winter to the weather.

Johannes Swammerdam of Amſterdam alſo publiſhed ſome anatomical treatiſes; but was moſt remarkable for his knowledge of preſerving the parts of bodies entire for many years, by injecting their veſſels. He alſo publiſhed a treatiſe on reſpiration; wherein he mentioned his having figures of all the parts of the body, as big as the life, cut in copper, which he deſigned to publiſh, with a complete ſyſtem of anatomy. Theſe, however, were never made public by Swammerdam; but, in 1683, Gothofridus Bidloo, profeſſor of anatomy at Leyden, publiſhed a work entitled *Anatomia Corporis Humani*, where all the parts were delineated in very large plates almoſt as big as the life. Mr Cowper, an Engliſh ſurgeon, bought 300 copies of theſe figures; and in 1698, publiſhed them, with an Engliſh text, quite different from Bidloo's Latin one; to which were added letters in Bidloo's figures, and ſome few figures of Mr Cowper's own. To this work Cowper's name was prefixed, without the leaſt mention of Bidloo, except on purpoſe to confute him. Bidloo immediately publiſhed a very ill-natured pamphlet, called *Gulielmus Cowperus citatus coram tribunali*; appealing to the Royal Society, how far Cowper ought to be puniſhed as a plagiary of the worſt kind, and endeavouring to prove him an ignorant deceitful fellow. Cowper anſwered him in his own ſtyle, in a pamphlet called his *Vindiciæ*, endeavouring to prove, either that Bidloo did not underſtand his own tables, or that they were none of his. It was even alleged that thoſe were the tables promiſed by Swammerdam, and which Bidloo had got from his widow. This, however, appears to have been only an invidious ſurmiſe, there being unqueſtionable evidence that they were really the performance of Bidloo. History.

Soon after, Iſbrandus Diembroeck, profeſſor of anatomy at Utrecht, began to appear as an author. His work contained very little original; but he was at great pains to collect from others whatever was valuable in their writings, and his ſyſtem was the common ſtandard among anatomical ſtudents for many years.

About the ſame time, Antonius Leeuwenhoek of Delft improved conſiderably on Malpighi's uſe of microſcopes. Theſe two authors took up anatomy where others had dropt it; and, by this new art, they brought a number of amazing things to light. They diſcovered the red globules of the blood; they were enabled to ſee the actual circulation of the blood in the tranſparent parts of living animals, and could meaſure the velocity of its motion; they diſcovered that the arteries and veins had no intermediate cells or ſpongy ſubſtance, as Harvey and all the preceding anatomiſts had ſuppoſed, but communicated one with the other by a continuation of the ſame tube.

Leeuwenhoek was in great fame likewiſe for his diſcovery of the animalcula in the ſemen. Indeed there was ſcarcely a part of the body, ſolid or fluid, which eſcaped his examination; and he almoſt everywhere found, that what appeared to the naked eye to be rude indigeſted matter, was in reality a beautiful and regular compound.

After this period, Nuck added to our knowledge of the abſorbent ſyſtem already mentioned by his injections of the lymphatic glands; Ruyſch, by his deſcription of the valves of the lymphatic veſſels; and Dr Meckel, by his accurate account of the whole ſyſtem, and by tracing thoſe veſſels in many parts where they had not before been deſcribed.

Beſides theſe authors, Drs Hunter and Monro have called the attention of the public to this part of anatomy, in their controverſy concerning the diſcovery of the office of the lymphatics.

When the lymphatic veſſels were firſt ſeen and traced into the thoracic duct, it was natural for anatomiſts to ſuſpect, that as the lacteals abſorbed from the cavity of the inteſtines, the lymphatics, which are ſimilar in figure and ſtructure, might poſſibly do the ſame office with reſpect to other parts of the body: and accordingly, Dr Gliſſon, who wrote in 1654, ſuppoſes theſe veſſels aroſe from cavities, and that their uſe was to abſorb; and Frederic Hoffman has very explicitly laid down the doctrine of the lymphatic veſſels being a ſyſtem of abſorbents. But anatomiſts in general have been of a contrary opinion: for from experiments, particularly ſuch as were made by injections, they have been perſuaded that the lymphatic veſſels did not ariſe from cavities, and did not abſorb, but were merely continuations from ſmall arteries. The doctrine, therefore, that the lymphatics, like the lacteals, were abſorbents, as had been ſuggeſted by Gliſſon and by Hoffman, has been revived by Dr Hunter and Dr Monro, who have controverted the experiments of

History. their predeceſſors in anatomy, and have endeavoured to prove that the lymphatic veſſels are not continued from arteries, but are abſorbents.

To this doctrine, however, ſeveral objections have been ſtarted, particularly by Haller, (*Elem. Phyſ.* l. 24. § 2, 3.); and it has been found, that before the doctrine of the lymphatics being a ſyſtem of abſorbents can be eſtabliſhed, it muſt firſt be determined whether this ſyſtem is to be found in other animals beſides man and quadrupeds. Mr Hewſon claims the merit of having proved the affirmative of this queſtion, by diſcovering the lymphatic ſyſtem in birds, fiſh, and amphibious animals. See *Phil. Tranſ.* vol. lviii. and lxix.—And latterly, Mr Cruikſhank has traced the ramifications of that ſyſtem in almoſt every part of the body; and from his diſſections, figures have been made and lately publiſhed to the world. To Mr Sheldon alſo we are much indebted for his illuſtration of this ſyſtem, which promiſes to give great ſatisfaction, but of which only a part has been yet publiſhed.

The gravid uterus is a ſubject likewiſe which has received conſiderable improvements, particularly relating to one very important diſcovery; viz. that the internal membrane of the uterus, which Dr Hunter has named *decidua*, conſtitutes the exterior part of the ſecundines or after-birth, and ſeparates from the reſt of the uterus every time that a woman either bears a child or ſuffers a miſcarriage. This diſcovery includes another, to wit, that the placenta is partly made up of an exceſcence or efflorescence from the uterus itſelf.

Theſe diſcoveries are of the utmoſt conſequence, both in the phyſiological queſtion about the connexion between the mother and child, and likewiſe in explaining the phenomena of births and abortions, as well as in regulating obſtetrical practice.

The anatomiſts of this century have improved anatomy, and have made the ſtudy of it much more eaſy, by giving us more correct as well as more numerous figures. It is amazing to think of what has been done in that time. We have had four large folio books of figures of the bones, viz. Cheſelden's, Albinus's, Sue's and Trew's. Of the muſcles, we have had two large folios; one from Cowper, which is elegant; and one from Albinus, which, from the accuracy and labour of the work, we may ſuppoſe will never be outdone. Of the blood veſſels we have a large folio from Dr Haller. We have had one upon the nerves from Dr Meckel, and another by Dr Monro junior. We have had Albinus's, Roederer's, Jenty's, and Hunter's works upon the pregnant uterus; Weitbrecht and Leber on the joints and freſh bones; Soemerring on the brain; Zinn on the eye; Cotunnius, Meckel junior, &c. on the ear; Walter on the nerves of the thorax and abdomen; Dr Monro on the burſæ mucoſæ, &c.

It would be endleſs to mention the anatomical figures that have been publiſhed in this century of particular and ſmaller parts of the body, by Morgagni, Ruyſch, Valſalva, Santorini, Heiſter, Vater, Cant, Zimmerman, Walterus, and others.

Theſe elegant plates of the brain, however, juſt publiſhed by M. Vicq. d'Azyr, muſt not paſs without notice, eſpecially as they form part of an univerſal ſyſtem of anatomy and phyſiology, both human and comparative, promiſed to be executed in the ſame ſplendid ſtyle. Upon the brain alone 19 folio plates are employed; of which ſeveral are coloured. The figures are delineated with accuracy and clearneſs; but the colouring is rather beautiful than correct. Such parts of this work as may be publiſhed, cannot fail to be equally acceptable to the anatomiſt and the philoſopher: but the entire deſign is apparently too extenſive to be accompliſhed within the period of a ſingle life. In our own country, alſo, a very great anatomical work is carrying on by Andrew Bell, F. S. A. S. engraver to his Royal Highneſs the Prince of Wales, with the approbation of Dr Monro, and under the inſpection of his very ingenious aſſiſtant Mr Fyſe. It is to compoſe a complete illuſtration, both general and particular, of the human body, by a ſelection from the beſt plates of all the greateſt anatomiſts, as well foreign as of this country, exhibiting the lateſt diſcoveries in the ſcience, and accompanied with copious explanations. The whole number of plates mentioned in the Proſpectus is 240, of which 152 are already done; all in royal folio. History.

To the foreign treatiſes already mentioned may be added thoſe recently publiſhed by Sabbatier and Plenck on anatomy in general. Among ourſelves, the writings of Keil, Douglas, Cheſelden, the firſt Monro, Winſlow, &c. are too well known to need deſcription. The laſt of theſe uſed to be recommended as a ſtandard for the ſtudents of anatomy; but it has of late given place to a more accurate and comprehenſive ſyſtem, in three volumes, publiſhed by Mr Elliot of Edinburgh, upon a plan approved of Dr Monro, and executed by Mr Fife. Dr Simmons of London has alſo obliged the world with an excellent ſyſtem of anatomy; and another work, under the title of "Elements of Anatomy and the Animal Economy": in which the ſubjects are treated with uncommon elegance and perſpicuity.

In the latter part of the laſt century, anatomy made two great ſteps, by the invention of injections, and the method of making what we commonly call *preparations*. Theſe two modern arts have really been of infinite uſe to anatomy; and beſides have introduced an elegance into our adminiſtrations, which in former times could not have been ſuppoſed to be poſſible. They aroſe in Holland under Swammerdam and Ruyſch, and afterwards in England under Cowper, St André, and others, where they have been greatly improved.

The anatomiſts of former ages had no other knowledge of the blood veſſels than what they were able to collect from laborious diſſections, and from examining the ſmaller branches of them, upon ſome lucky occaſion, when they were found more than commonly loaded with red blood. But filling the vaſcular ſyſtem with a bright coloured wax, enables us to trace the large veſſels with great eaſe, renders the ſmaller much more conſpicuous, and makes thouſands of the very minute ones viſible, which from their delicacy, and the tranſparency of their natural contents, are otherwiſe imperceptible.

The modern art of corroding the fleſhy parts with a menſtruum, and of leaving the moulded wax entire, is ſo exceedingly uſeful, and at the ſame time ſo ornamental, that it does great honour to the ingenious inventor Dr Nicholls.

The wax-work art of the moderns might deſerve notice in any hiſtory of anatomy, if the maſters in that way had not been ſo careleſs in their imitation. Many of the wax figures are ſo tawdry, with a ſhow of unnatural colours, and ſo very incorrect in the circumſtances

of

General view of the ſubject

of figure, ſituation, and the like, that though they ſtrike a vulgar eye with admiration, they muſt appear ridiculous to an anatomiſt. But thoſe figures which are caſt in wax, plaiſter, or lead, from the real ſubject, and which of late years have been frequently made here, are, of courſe, very correct in all the principal parts, and may be conſidered as no inſignificant acquiſition to modern anatomy. The proper, or principal, uſe of this art is, to preſerve a very perfect likeneſs of ſuch ſubjects as we but ſeldom can meet with, or cannot well preſerve in a natural ſtate; a ſubject in pregnancy, for example.

The modern improved methods of preſerving animal bodies, or parts of them, has been of the greateſt ſervice to anatomy; eſpecially in ſaving the time and labour of the anatomiſt in the nicer diſſections of the ſmall parts of the body. For now, whatever he has prepared with care, he can preſerve; and the object is ready to be ſeen at any time. And in the ſame manner he can preſerve anatomical curioſities, or rarities of every kind; ſuch as, parts that are uncommonly formed; parts that are diſeaſed; the parts of the pregnant uterus and its contents. Large collections of ſuch curioſities, which modern anatomiſts are ſtriving almoſt everywhere to procure, are of infinite ſervice to the art, eſpecially in the hands of teachers. They give ſtudents clear ideas about many things which it is very eſſential to know, and yet which it is impoſſible that a teacher ſhould be able to ſhow otherwiſe, were he ever ſo well ſupplied with freſh ſubjects.

§ 2. *View of the Subject in general, and Plan of the following Treatiſe.*

The etymology of the word *anatomy*, as above given implies ſimply *diſſection*; but by this term ſomething more is uſually underſtood.

It is every day made uſe of to expreſs a knowledge of the human body; and a perſon who is ſaid to underſtand anatomy, is ſuppoſed to be converſant with the ſtructure and arrangement of the different ſolid parts of the body.

It is commonly divided into *Anatomy*, properly ſo called; and *Comparative* Anatomy: the firſt of theſe is confined ſolely to the human body; the latter includes all animals, ſo far as a knowledge of their ſtructure may tend to perfect our ideas of the human body.

The term *anatomy* may alſo have another and more extenſive ſignification: it may be employed to expreſs not only a knowledge of the ſtructure and diſpoſition of the parts, but likewiſe of their economy and uſe. Conſidered in this light, it will ſeldom fail to excite the curioſity of people of taſte, as a branch of philoſophy; ſince, if it is pleaſing to be acquainted with the ſtructure of body, it is certainly more ſo to diſcover all the ſprings which give life and motion to the machine, and to obſerve the admirable mechaniſm by which ſo many different functions are executed.

Aſtronomy and anatomy, as Dr Hunter, after Fontenelle, obſerves, are the ſtudies which preſent us with the moſt ſtriking view of the two greateſt attributes of the Supreme Being. The firſt of theſe fills the mind with the idea of his immenſity, in the largeneſs, diſtances, and number of the heavenly bodies; the laſt aſtoniſhes with his intelligence and art in the variety and delicacy of animal mechaniſm.

The human body has been commonly enough known by the name of *Microcoſmus*, or the little world; as it did not differ ſo much from the univerſal ſyſtem of nature in the ſymmetry and number of its parts as in their ſize.

Galen's excellent treatiſe *De Uſu Partium*, was compoſed as a proſe hymn to the Creator; and abounds with as irreſiſtible proofs of a ſupreme Cauſe and governing Providence, as we find in modern phyſicotheology. And Cicero dwells more on the ſtructure and economy of animals than on all the productions of nature beſides, when he wants to prove the exiſtence of the gods from the order and beauty of the univerſe. He there takes a ſurvey of the body of man in a moſt elegant ſynopſis of anatomy; and concludes thus: "Quibus rebus expoſitis, ſatis docuiſſe videor, hominis natura, quanto omnes anteiret animantes. Ex quo debet intelligi, nec figuram ſitumque membrorum, nec ingenii mentiſque vim talem effici potuiſſe fortuna."

The ſatisfaction of mind which ariſes from the ſtudy of anatomy, and the influence which it muſt naturally have upon our minds as philoſophers, cannot be better conveyed than by the following paſſage from the ſame author: "Quæ contuens animus, accepit ab his cognitionem deorum, ex qua oritur pietas: cui conjuncta juſtitia eſt, reliquæque virtutes: ex quibus vita beata exſiſtit, par et ſimilis deorum, nulla alia re niſi immortalitate, quæ nihil ad bene vivendum pertinet, cedens cæleſtibus."

It would be endleſs to quote the animated paſſages of this ſort which are to be found in the phyſicians, philoſophers, and theologiſts, who have conſidered the ſtructure and functions of animals with a view towards the Creator. It is a view which muſt ſtrike one with a moſt awful conviction. Who can know and conſider the thouſand evident proofs of the aſtoniſhing art of the Creator, in forming and ſuſtaining an animal body ſuch as ours, without feeling the moſt pleaſant enthuſiaſm? Can we ſeriouſly reflect upon this awful ſubject, without being almoſt loſt in adoration? without longing for another life after this, in which we may be gratified with the higheſt enjoyment which our faculties and nature ſeem capable of, the ſeeing and comprehending the whole plan of the Creator, in forming the univerſe, and in directing all its operations?

But the more immediate purpoſes of anatomy concern thoſe who are to be the guardians of health, as this ſtudy is neceſſary to lay a foundation for all the branches of medicine. The more we know of our fabric, the more reaſon we have to believe, that if our ſenſes were more acute, and our judgment more enlarged, we ſhould be able to trace many ſprings of life which are now hidden from us: by the ſame ſagacity we ſhould diſcover the true cauſes and nature of diſeaſes; and thereby be enabled to reſtore the health of many, who are now, from our more confined knowledge, ſaid to labour under incurable diſorders. By ſuch an intimate acquaintance with the economy of our bodies, we ſhould diſcover even the ſeeds of diſeaſes, and deſtroy them before they had taken root in the conſtitution.

That anatomy is the very baſis of ſurgery every body allows. It is diſſection alone that can teach us, where we may cut the living body with freedom and deſpatch; and where we may venture with great circumſpection

and

General view of the ſubject.

and delicacy; and where we muſt not upon any account attempt it. This informs the *head*, gives dexterity to the *hand*, and familiarizes the *heart* with a ſort of neceſſary inhumanity, the uſe of cutting inſtruments upon our fellow-creatures.

Beſides the knowledge of our body, through all the variety of its *ſtructure* and *operations* in a *ſound* ſtate, it is by anatomy only that we can arrive at the knowledge of the true nature of moſt of the diſeaſes which afflict humanity. The ſymptoms of many diſorders are often equivocal; and diſeaſes themſelves are thence frequently miſtaken, even by ſenſible, experienced, and attentive phyſicians. But by anatomical examination after death, we can with certainty find out the miſtake, and learn to avoid it in any ſimilar caſe.

This uſe of anatomy has been ſo generally adopted by the moderns, that the caſes already publiſhed are almoſt innumerable: Mangetus, Morgagni, indeed many of the beſt modern writings in phyſic, are full of them. And if we look among the phyſicians of the beſt character, and obſerve thoſe who have the *art* itſelf, rather than the *craft* of the profeſſion at heart; we ſhall find them conſtantly taking pains to procure leave to examine the bodies of their patients after death.

After having conſidered the riſe and progreſs of anatomy; the various diſcoveries that have been made in it, from time to time; the great number of diligent obſervers who have applied themſelves to this art; and the importance of the ſtudy, not only for the prevention and cure of diſeaſes, but in furniſhing the livelieſt proofs of divine wiſdom; the following queſtions ſeem naturally to ariſe: For what purpoſes is there ſuch a variety of parts in the human body? Why ſuch a complication of nice and tender machinery? Why was there not rather a more ſimple, leſs delicate, and leſs expenſive frame (A)?

In order to acquire a ſatisfactory general idea of this ſubject, and find a ſolution of all ſuch queſtions, let us, in our imagination, *make* a man: in other words, let us ſuppoſe that the *mind*, or immaterial part, is to be placed in a corporeal fabric, in order to hold a correſpondence with other material beings by the intervention of the body; and then conſider, *à priori*, what will be wanted for her accommodation. In this inquiry, we ſhall plainly ſee the neceſſity or advantage, and therefore the final cauſe, of moſt of the parts which we actually find in the human body. And if we conſider that, in order to anſwer ſome of the requiſites, human wit and invention would be very inſufficient; we need not be ſurpriſed if we meet with ſome parts of the body whoſe uſe we cannot yet perceive, and with ſome operations or functions which we cannot explain. We can ſee that the whole bears the moſt ſtriking characters of excelling wiſdom and ingenuity: but the imperfect ſenſes and capacity of *man* cannot pretend to reach every part of a machine, which nothing leſs than the intelligence and power of the *Supreme Being* could contrive and execute.

Firſt, then, The *mind*, the thinking immaterial agent, muſt be provided with a place of immediate reſidence, which ſhall have all the requiſites for the union of ſpirit and body; accordingly ſhe is provided with the *brain*, where ſhe dwells as governor and ſuperintendant of the whole fabric.

General view of the ſubject.

In the next place, As ſhe is to hold a correſpondence with all the material beings around her, ſhe muſt be ſupplied with organs fitted to receive the different kinds of impreſſions which they will make. In fact, therefore, we ſee that ſhe is provided with the organs of ſenſe, as we call them; the eye is adapted to light; the ear to ſound; the noſe to ſmell; the mouth to taſte; and the ſkin to touch.

Further: She muſt be furniſhed with organs of communication between herſelf in the brain and thoſe organs of ſenſe, to give her information of all the impreſſions that are made upon them: and ſhe muſt have organs between herſelf in the brain and every other part of the body, fitted to convey her commands and influence over the whole. For theſe purpoſes the nerves are actually given. They are chords, which riſe from the brain, the immediate reſidence of the mind, and diſperſe themſelves in branches through all parts of the body. They convey all the different kinds of ſenſations to the mind, in the brain; and likewiſe carry out from thence all her commands or influence to the other parts of the body. They are intended to be occaſional monitors againſt all ſuch impreſſions as might endanger the wellbeing of the whole, or of any particular part; which vindicates the Creator of all things, in having actually ſubjected us to thoſe many diſagreeable and painful ſenſations which we are expoſed to from a thouſand accidents in life.

Moreover, the mind, in this corporeal ſyſtem, muſt be endued with the power of moving from place to place, that ſhe may have intercourſe with a variety of objects; that ſhe may fly from ſuch as are diſagreeable, dangerous, or hurtful, and purſue ſuch as are pleaſant or uſeful to her. And accordingly ſhe is furniſhed with limbs, and with muſcles and tendons, the inſtruments of motion, which are found in every part of the fabric where motion is neceſſary.

But to ſupport, to give firmneſs and ſhape to the fabric; to keep the ſofter parts in their proper places; to give fixed points for, and the proper direction to its motions, as well as to protect ſome of the more important and tender organs from external injuries; there muſt be ſome firm prop-work interwoven through the whole. And in fact, for ſuch purpoſes the bones are given.

The prop-work muſt not be made into one rigid fabric, for that would prevent motion. Therefore there are a number of bones.

Theſe pieces muſt all be firmly bound together, to prevent their diſlocation. And this end is perfectly well anſwered by the ligaments.

The extremities of theſe bony pieces, where they move and rub upon one another, muſt have ſmooth and ſlippery ſurfaces for eaſy motion. This is moſt happily provided for by the cartilages and mucus of the joints.

The

(A) The following beautiful repreſentation is taken from the late Dr Hunter's *Introductory Lecture in Anatomy*.

General view of the subject

The interſtices of all theſe parts muſt be filled up with ſome ſoft and ductile matter, which ſhall keep them in their places, unite them, and at the ſame time allow them to move a little upon one another. And theſe purpoſes are anſwered by the cellular membrane or adipoſe ſubſtance.

There muſt be an outward covering over the whole apparatus, both to give it compactneſs and to defend it from a thouſand injuries; which, in fact, are the very purpoſes of the ſkin and other integuments.

Laſtly, The mind being formed for ſociety and intercourſe with beings of her own kind, ſhe muſt be endued with powers of expreſſing and communicating her thoughts by ſome ſenſible marks or ſigns; which ſhall be both eaſy to herſelf, and admit of great variety: and accordingly ſhe is provided with the organs and faculty of ſpeech, by which ſhe can throw out ſigns with amazing facility, and vary them without end.

Thus we have built up an animal body which would ſeem to be pretty complete: but as it is the nature of matter to be altered and worked upon by matter; ſo in a very little time ſuch a living creature muſt be deſtroyed, if there is no proviſion for repairing the injuries which ſhe muſt commit upon herſelf, and thoſe which ſhe muſt be expoſed to from without. Therefore a treaſure of blood is actually provided in the heart and vaſcular ſyſtem, full of nutritious and healing particles, fluid enough to penetrate into the minuteſt parts of the animal; impelled by the heart, and conveyed by the arteries, it waſhes every part, builds up what was broken down, and ſweeps away the old and uſeleſs materials. Hence we ſee the neceſſity or advantage of the heart and arterial ſyſtem.

What more there was of this blood than enough to repair the preſent damages of the machine, muſt not be loſt, but ſhould be returned again to the heart; and for this purpoſe the venous ſyſtem is actually provided.

Theſe requiſites in the animal explain, *à priori*, the circulation of the blood.

The old materials which were become uſeleſs, and are ſwept off by the current of blood, muſt be ſeparated and thrown out of the ſyſtem. Therefore glands, the organs of ſecretion, are given for ſtraining whatever is redundant, vapid, or noxious, from the maſs of blood; and when ſtrained, they are thrown out by emunctories, called organs of excretion.

But now, as the machine muſt be conſtantly wearing, the reparation muſt be carried on without intermiſſion, and the ſtrainers muſt always be employed. Therefore there is actually a perpetual circulation of the blood, and the ſecretions are always going on.

Even all this proviſion, however, would not be ſufficient; for that ſtore of blood would ſoon be conſumed, and the fabric would break down, if there were not a proviſion made for freſh ſupplies. Theſe we obſerve, in fact, are profuſely ſcattered round her in the animal and vegetable kingdoms; and ſhe is furniſhed with hands, the fitteſt inſtruments that could have been contrived, for gathering them, and for preparing them in a variety of ways for the mouth.

But theſe ſupplies, which we call food, muſt be conſiderably changed; they muſt be converted into blood. Therefore ſhe is provided with teeth for cutting and bruiſing the food, and with a ſtomach for melting it down: In ſhort, with all the organs ſubſervient to digeſtion. The finer parts of the aliments only can be uſeful in the conſtitution: theſe muſt be taken up and conveyed into the blood, and the dregs muſt be thrown off. With this view the inteſtinal canal is actually given. It ſeparates the nutritious part, which we call *chyle*, to be conveyed into the blood by the ſyſtem of abſorbent veſſels; and the feces paſs downwards, to be conducted out of the body.

General view of the ſubject.

Now we have got our animal not only furniſhed with what is wanted for its immediate exiſtence, but alſo with the powers of protracting that exiſtence to an indefinite length of time. But its duration, we may preſume, muſt neceſſarily be limited: for as it is nouriſhed, grows, and is raiſed up to its full ſtrength and utmoſt perfection; ſo it muſt in time, in common with all material beings, begin to decay, and then hurry on to final ruin. Hence we ſee the neceſſity of a ſcheme for renovation. Accordingly wiſe Providence, to perpetuate as well as preſerve his work, beſides giving a ſtrong appetite for life and ſelf-preſervation, has made animals male and female, and given them ſuch organs and paſſions as will ſecure the propagation of the ſpecies to the end of time.

Thus we ſee, that by the very imperfect ſurvey which human reaſon is able to take of this ſubject, the animal man muſt neceſſarily be complex in his corporeal ſyſtem, and in its operations.

He muſt have one great and general ſyſtem, the vaſcular, branching through the whole for circulation: Another, the nervous, with its appendages the organs of ſenſe, for every kind of feeling: And a third, for the union and connexion of all thoſe parts.

Beſides theſe primary and general ſyſtems, he requires others which may be more local or confined: One for ſtrength, ſupport, and protection; the bony compages: Another for the requiſite motions of the parts among themſelves, as well as for moving from place to place; the muſcular part of the body: Another to prepare nouriſhment for the daily recruit of the body; the digeſtive organs: And one for propagating the ſpecies; the organs of generation.

And in taking this general ſurvey of what would appear, *à priori*, to be neceſſary for adapting an animal to the ſituations of life, we obſerve, with great ſatisfaction, that man is accordingly made of ſuch ſyſtems, and for ſuch purpoſes. He has them all; and he has nothing more except the organs of reſpiration. Breathing it ſeemed difficult to account for *à priori*: we only knew it to be in fact eſſential and neceſſary to life. Notwithſtanding this, when we ſaw all the other parts of the body, and their functions, ſo well accounted for, and ſo wiſely adapted to their ſeveral purpoſes, there could be no doubt that reſpiration was ſo likewiſe: And accordingly, the diſcoveries of Dr Prieſtley have lately thrown light upon this function alſo, as will be ſhown in its proper place.

Of all the different ſyſtems in the human body, the uſe and neceſſity are not more apparent, than the wiſdom and contrivance which has been exerted in putting them all into the moſt compact and convenient form: in diſpoſing them ſo, that they ſhall mutually receive and give helps to one another; and that all, or many of the parts, ſhall not only anſwer their principal end or purpoſe, but operate ſucceſsfully and uſefully in a variety of ſecondary ways.

General view of the ſubject.

If we conſider the whole animal machine in this light, and compare it with any machine in which human art has exerted its utmoſt; ſuppoſe the beſt conſtructed ſhip that ever was built, we ſhall be convinced beyond the poſſibility of doubt, that there are intelligence and power far ſurpaſſing what humanity can boaſt of.

One ſuperiority in the natural machine is peculiarly ſtriking. In machines of human contrivance or art, there is no internal power, no principle in the machine itſelf, by which it can alter and accommodate itſelf to any injury which it may ſuffer, or make up any injury which admits of repair. But in the natural machine, the animal body, this is moſt wonderfully provided for, by internal powers in the machine itſelf; many of which are not more certain and obvious in their effects, than they are above all human comprehenſion as to the manner and means of their operation. Thus, a wound heals up of itſelf; a broken bone is made firm again by a callus; a dead part is ſeparated and thrown off; noxious juices are driven out by ſome of the emunctories; a redundancy is removed by ſome ſpontaneous bleeding; a bleeding naturally ſtops of itſelf; and a great loſs of blood, from any cauſe, is in ſome meaſure compenſated by a contracting power in the vaſcular ſyſtem, which accommodates the capacity of the veſſels to the quantity contained. The ſtomach gives information when the ſupplies have been expended; repreſents, with great exactneſs, the quantity and the quality of what is wanted in the preſent ſtate of the machine; and in proportion as ſhe meets with neglect, riſes in her demand, urges her petition in a louder tone, and with more forcible arguments. For its protection, an animal body reſiſts heat and cold in a very wonderful manner, and preſerves an equal temperature in a burning and in a freezing atmoſphere.

General view of the ſubject.

A further excellence and ſuperiority in the natural machine, if poſſible, ſtill more aſtoniſhing, more beyond all human comprehenſion, than what we have been ſpeaking of, is the following: Beſides thoſe internal powers of ſelf-preſervation in each individual, when two of them co-operate, or act in concert, they are endued with powers of making other animals, or machines, like themſelves, which again are poſſeſſed of the ſame powers of producing others, and ſo of multiplying the ſpecies without end.

Theſe are powers which mock all human invention or imitation. They are characteriſtics of the divine Architect.

Having premiſed this general account of the ſubject, we ſhall next conſider the method to be obſerved in treating it.

Anatomy, it has been already obſerved, is divided into two parts; Anatomy, properly ſo called, or the anatomy of the human body, and Comparative Anatomy. In the following treatiſe we ſhall adopt the ſame arrangement. In the firſt part we ſhall treat of the Anatomy of the Human Body, and in the ſecond of Comparative Anatomy.

PART I.

ANATOMY OF THE HUMAN BODY.

THE ſtudy of the *human* body, as already noticed, is commonly divided into two parts. The firſt, which is called *Anatomy*, relates to the matter and ſtructure of its parts; the ſecond, called *Phyſiology* and *animal economy*, relates to the principles and laws of its internal operations and functions.

As the body is a compound of ſolids and fluids, *Anatomy* is divided into,

1. The Anatomy of the ſolids, and
2. The Anatomy of the fluids.

I. The SOLIDS, by which we mean all parts of our body which are not fluid, are generally divided into two claſſes, viz.

1. The hard ſolids or bones. This part of anatomy is called *Oſteology*; which ſignifies the doctrine of the bones.

2. The ſofter ſolids; which part is called *Sarcology*, viz. the doctrine of fleſh.

This diviſion of the ſolids, we may obſerve, has probably taken its origin from the vulgar obſervation, that the body is made of bone and fleſh. And as there are many different kinds of what are called ſoft or fleſhy parts, Sarcology is ſubdivided into,

(1.) *Angeology*, or the doctrine of veſſels; by which is commonly underſtood *blood veſſels*:

(2.) *Adenology*, of glands;

(3.) *Neurology*, of nerves:

(4.) *Myology*, of muſcles: and,

(5.) *Splanchnology*, of the viſcera or bowels. There is, beſides, that part which treats of the organs of ſenſe and of the integuments.

This diviſion of the ſolids has been here mentioned, rather for the ſake of explaining ſo many words, which are conſtantly uſed by anatomiſts, than for its importance or accuracy. For beſides many other objections that might be urged, there are in the body three ſpecies of ſolids, viz. griſtle or cartilage, hair, and nails; which are of an intermediate nature between bone and fleſh; and therefore cannot ſo properly be brought into the oſteology or the ſarcology. The cartilages were claſſed with the bones: becauſe the greateſt number of them are appendages to bones: and for the like reaſon the hair and the nails were claſſed with the integuments.

II. The FLUIDS of the human body may be divided into *three* kinds, which Dr Hunter calls the *crude*, the *general* or *perfect*, and the *local* or *ſecreted fluid*.

1. By the *crude* fluid is meant the chyle, and whatever is abſorbed at the ſurfaces of the body; in other words, what is recently taken into the body, and is not yet mixed with or converted into blood.

2. The *general* or *perfect* fluid is the blood itſelf; viz. what is contained in the heart, arteries, and veins, and is going on in the round of the circulation.

3. The

Osteology. 3. The *local* or *fecreted*, are thofe fluids peculiar to particular parts of the body, which are ſtrained off from the blood, and yet are very different in their properties from the blood. They are commonly called *fecretions*; and ſome are uſeful, others excrementitious.

In treating of the *Phyſiology*, it is very difficult to ſay what plan ſhould be followed: for every method which has been yet propoſed is attended with manifeſt inconvenience. The powers and operations of the machine have ſuch a dependence upon one another, ſuch connexions and reciprocal influence, that they cannot well be underſtood or explained ſeparately. In this ſenſe our body may be compared to a circular chain of powers, in which nothing is firſt or laſt, nothing ſolitary or independent; ſo that whenever we begin, we find that there is ſomething preceding which we ought to have known. If we begin with the brain and the nerves, for example, we ſhall find that theſe cannot exiſt, even in idea, without the heart: if we ſet out with the heart and vaſcular ſyſtem, we ſhall preſently be ſenſible that the brain and the nerves muſt be ſuppoſed: or, ſhould we take up the mouth, and follow the courſe of the aliment, we ſhould ſee that the very firſt organ which preſented itſelf, ſuppoſed the exiſtence both of the heart and brain: Wherefore we ſhall incorporate the Phyſiology with the Anatomy, by attempting to explain the functions after we have demonſtrated the organs. Osteology.

CHAP. I. OSTEOLOGY.

WE begin with the bones, which may be conſidered as the great ſupport of the body, tending to give it ſhape and firmneſs.—But before we enter into the detail of each particular bone, it will be neceſſary to deſcribe their compoſition and connexions, and to explain the nature of the different parts which have an immediate relation to them: as the cartilages, ligaments, perioſteum, marrow, and ſynovial glands.

SECT. I. *Of the Bones in general, with their Appendages*, &c.

Of the compoſition of the bones.

THE bones are of a firm and hard (B) ſubſtance, of a white colour, and perfectly inſenſible. They are the moſt compact and ſolid parts of the body, and ſerve for the attachment or ſupport of all the other parts.

Three different ſubſtances are uſually diſtinguiſhed in them; their exterior or bony part, properly ſo called; their ſpongy cells; and their reticular ſubſtance. The firſt of theſe is formed of many laminæ or plates, compoſing a firm hard ſubſtance.—The ſpongy or cellular part is ſo called on account of its reſemblance to a ſponge, from the little cells which compoſe it. This ſubſtance forms almoſt the whole of the extremities of cylindrical bones. The reticular part is compoſed of fibres, which croſs each other in different directions. This net-work forms the internal ſurface of thoſe bones which have cavities.

The flat bones, as thoſe of the head, are compoſed only of the laminæ and the cellular ſubſtance. This laſt is uſually found in the middle of the bone, dividing it into two plates, and is there called *diploë*.

Gagliardi, who pretended to have diſcovered an infinite number of claviculi (C) or bony proceſſes, which he deſcribes as traverſing the laminæ to unite them together, has endeavoured to ſupport this pretended diſcovery by the analogy of bones to the bark of trees, in which certain woody nails have been remarked; but this opinion ſeems to be altogether fanciful.

Some writers have ſuppoſed, that the bones are formed by layers of the perioſteum, which gradually oſſify in the ſame manner as the timber is formed in trees by the hardening of the white ſubſtance that is found between the inner bark and the wood. M. Duhamel, who has adopted this opinion, fed different animals with madder and their ordinary food alternately during a certain time; and he aſſerts, that in diſſecting their bones, he conſtantly obſerved diſtinct layers of red and white, which correſponded with the length of time they had lived on madder or their uſual aliment. But it has ſince been proved by Detleff, that M. Duhamel's experiments were inaccurate, and that neither the perioſteum nor the cartilages are tinged by the uſe of madder, which is known to affect the bones only.

We uſually conſider in a bone, its body and its extremities. The ancients gave the name of diaphyſis to the body or middle part, and divided the extremities into apophyſis and epiphyſis. An apophyſis, or proceſs, as it is more commonly called, is an eminence continued from the body of the bone, whereas an epiphyſis is at firſt a ſort of an appendage to the bone by means of an intermediate cartilage. Many epiphyſes, which appear as diſtinct bones in the fœtus, afterwards become apophyſes; for they are at length ſo completely united to the body of the bone as not to be diſtinguiſhable from it in the adult ſtate. It is not unuſual however, at the age of 18 and even 20 years, to find the extremities of bones ſtill in the ſtate of epiphyſes.

The names given to the proceſſes of bones are expreſſive of their ſhape, ſize, or uſe; thus if a proceſs is large and of a ſpherical form, it is called *caput*, or *head*; if the head is flatted, it is termed *condyle*. Some proceſſes, from their reſemblance to a ſtiletto, a breaſt, or the beak of a crow, are called *ſtyloid*, *maſtoid* or *coracoid*; others are ſtyled *ridges* or *ſpines*. The two proceſſes of the os femoris derive their name of *trochanters* from their uſe.

A bone has its cavities as well as proceſſes. Theſe cavities

(B) Mr Scheele diſcovered that bones contain the phoſphoric acid united with calcareous earth; and that to this combination they owe their firmneſs.

(C) In his *Anat. oſſium nov. invent. illuſtrat.* he deſcribes four kinds of theſe claviculi or nails, viz. the perpendicular, oblique, headed, and crooked.

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2 Connexion of the bones. We ſhall abridge this article, which is exceedingly diffuſe in the generality of anatomical books, and will endeavour to deſcribe it with all the clearneſs it will allow.

The bones compoſing the ſkeleton are ſo conſtructed, that the end of every bone is perfectly adapted to the extremity of that with which it is connected, and this connexion forms what is called their *articulation*.

Articulation is divided into *diarthroſis*, *ſynarthroſis*, and *amphiarthroſis*, or moveable, immoveable, and mixed articulation. Each of the two firſt has its ſubdiviſions. Thus the *diarthroſis*, or moveable articulation, includes, 1. The enarthroſis, as it is called, when a large head is admitted into a deep cavity, as in the articulation of the os femoris with the os innominatum. 2. Arthrodia, when a round head is articulated with a ſuperficial cavity, as is the caſe of the os humeri and ſcapula. 3. Ginglimus, or hinge-like articulation, as in the connexion of the thigh-bone with the tibia. The enarthroſis and arthrodia allow of motion to all ſides; the ginglimus only of flexion and extenſion.

The *ſynarthroſis*, or immoveable articulation, includes, 1. The ſuture, when the two bones are indented into each other, as is the caſe with the parietal bones. 2. Gomphoſis, when one bone is fixed into another, in the manner the teeth are placed in their ſockets.

The term *amphiarthroſis* is applied to thoſe articulations which partake both of the ſynarthroſis and diarthroſis, as is the caſe with the bones of the vertebræ, which are capable of motion in a certain degree, although they are firmly connected together by intermediate cartilages.

What is called *ſymphyſis* is the union of two bones into one; as in the lower jaw, for inſtance, which in the fœtus conſiſts of two diſtinct bones, but becomes one in a more advanced age, by the oſſification of the uniting cartilage.

When bones are thus joined by the means of cartilages, the union is ſtyled *ſynchondroſis*; when by ligaments, *ſyneuroſis*.

3 Of the cartilages. Cartilages are white, ſolid, ſmooth, and elaſtic ſubſtances, between the hardneſs of bones and ligaments, and ſeemingly of a fibrous texture. We are not able to trace any veſſels into their ſubſtance by injection, nor are they ever found tinged in animals that have been fed with madder.

They may be diſtinguiſhed into, 1ſt, Thoſe which are connected with the bones; and 2dly, Thoſe which belong to other parts of the body. The firſt ſerve either to cover the ends and cavities of bones intended for motion, as in the articulations, where by their ſmoothneſs they facilitate motions, which the bones alone could not execute with ſo much freedom; or, they ſerve to unite bones together, as in the ſymphyſis pubis, or to lengthen them as in the ribs. Osteology.

Many of them oſſifying as we advance in life, their number is leſs in the adult than in the fœtus, and of courſe there are fewer bones in the old than in the young ſubject.

Of the ſecond claſs of cartilages, or thoſe belonging to the ſoft parts, we have inſtances in the larynx, where we find them uſeful in the formation of the voice, and for the attachment of muſcles.

4 Of the periosteum. The periоſteum is a fine membrane of a compact cellular texture, reflected from one joint to another, and ſerving as a common covering to the bones. It has ſanguiferous and lymphatic veſſels, and is ſupplied with nerves from the neighbouring parts. It adheres very firmly to their ſurface, and by its ſmoothneſs facilitates the motion of muſcles. It likewiſe ſupports the veſſels that go to be diſtributed through the ſubſtance of the bones, and may ſerve to ſtrengthen the articulations. At the extremities of bones, where it is found covering a cartilage, it has by ſome been improperly conſidered as a diſtinct membrane, and named *perichondrium*. This, in its uſe and ſtructure, reſembles the periоſteum. Where it covers the bones of the ſkull, it has gotten the name of *pericranium*.

The periоſteum is not a production of the dura mater, as the ancients, and after them Havers, imagined; nor are the bones formed by the oſſification of this membrane, at leaſt when it is in a ſound ſtate, as ſome late writers have ſuppoſed.

The periоſteum is deficient in the teeth above the ſockets, and in thoſe parts of bones to which ligaments or tendons are attached.

5 Of the marrow. The marrow is a fat oily ſubſtance, filling the cavities of bones. In the great cavities of long bones it is of a much firmer conſiſtence than in the cells of their ſpongy part. In the former it inclines ſomewhat to a yellowiſh tinge, and is of the conſiſtence of fat; in the latter it is more fluid, and of a red colour. This difference in colour and conſiſtence is owing to accidental cauſes; both kinds are of the ſame nature, and may both be deſcribed under the common name of marrow, though ſome writers give this name only to the fat-like ſubſtance, and call the other the medullary juice.

The marrow is contained in a very fine and tranſparent membrane, which is ſupplied with a great number of blood veſſels, chiefly from the periоſteum. This membrana medullaris adheres to the inner ſurface of the bones, and furniſhes an infinite number of minute bags or veſicles for encloſing the marrow, which is likewiſe ſupported in the cavities of the bones by the long filaments of their reticular ſubſtance.

Beſides the veſſels from the periоſteum, the membrana medullaris is furniſhed with others, which in the long bones may be ſeen paſſing in near the extremities of the bone, and ſending off numerous branches that ramify through all the veſicles of this membrane.

The bones, and the cells containing the marrow, are

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are likewiſe furniſhed with lymphatics. By their means, the marrow, like the fat, may be taken up in a greater quantity than it is ſecreted: and hence it is that ſo little is found in the bones of thoſe who die of lingering diſeaſes.

It is ſtill a matter of controverſy, Whether the marrow is ſenſible or not? We are certainly not able to trace any nerves to it; and from this circumſtance, and its analogy to fat, Haller has ventured to conſider it as inſenſible. On the other hand, Duverney aſſerts, that an injury done to this ſubſtance in a living animal was attended with great pain. In this diſpute phyſiologiſts do not ſeem to have ſufficiently diſcriminated between the marrow itſelf and the membranous cells in which it is contained. The former, like the fat, being nothing more than a ſecreted, and of courſe an inorganized matter, may, with propriety, be ranked among the inſenſible parts, as much as inſpiſſated mucus or any other ſecreted matter in the body; whereas the membrana medullaris being vaſcular, though it poſſeſſes but an obſcure degree of feeling in a ſound ſtate, is not perfectly inſenſible.

The marrow was formerly ſuppoſed to be intended for the nouriſhment and renewal of the bones; but this doctrine is now pretty generally and deſervedly exploded. It ſeems probable that the marrow is to the bones what fat is to the ſoft parts. They both ſerve for ſome important purpoſes in the animal economy; but their particular uſe has never yet been clearly aſcertained. The marrow, from the tranſudation of the oil through the bones of a ſkeleton, is ſuppoſed to diminiſh their brittleneſs; and Havers, who has written profeſſedly on the bones, deſcribes the canals by which the marrow is conveyed through every part of their ſubſtance, and divides them into longitudinal and tranſverſe ones. He ſpeaks of the firſt as extending through the whole length of the bone; and of the latter, as the paſſages by which the longitudinal ones communicate with each other. The ſimilarity of theſe to the large cancelli in burnt bones, and the tranſudation of the oil through the bones of the ſkeleton, ſeems to prove that ſome ſuch paſſages do actually exiſt.

6 Synovial glands.

The ſynovial glands are ſmall bodies (D), ſuppoſed to be of a glandular ſtructure, and exceedingly vaſcular, ſecreting a fluid of a clear mucilaginous nature, which ſerves to lubricate the joints. They are placed in ſmall cavities in the articulations, ſo as to be capable of being gently compreſſed by the motion of the joint, which expreſſes their juice in proportion to the degree of friction. When the ſynovia is wanting, or is of too thick a conſiſtence, the joint becomes ſtiff and incapable of flexion or extenſion. This is what is termed *anchyloſis*.

7 Of the ligaments.

Ligaments are white, gliſtening, inelaſtic bands, of a compact ſubſtance, more or leſs broad or thick, and ſerving to connect the bones together. They are diſtinguiſhed by different names adapted to their different forms and uſes. Thoſe of the joints are called either round or burſal. The round ligaments are white, tendinous, and inelaſtic. They are ſtrong and flexible, and are found only in the joint of the knee, and in the articulation of the os femoris with the os innominatum. The burſal or capſular ligaments ſurround the whole joint like a purſe, and are to be found in the articulations which allow motion every way, as in the articulation of the arm with the ſcapula.

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5 Burſæ mucoſæ.

Of thoſe ſacs called *Burſæ Mucoſæ*, a few were formerly known to former anatomiſts, but by much the greater number have been ſince diſcovered by Dr Monro (E), who obſerves, that they are to be met with in the extremities of the body only; that many of them are placed entirely on the inner ſides of the tendons, between theſe and the bones. Many others cover not only the inner, but the outer ſides of the tendons, or are interpoſed between the tendons and external parts, as well as between thoſe and the bones.

Some are ſituated between the tendons and external parts only or chiefly, ſome between contiguous tendons, or between the tendons or the ligaments and the joints. A few ſuch ſacs are obſerved where the proceſſes of bones play upon the ligaments, or where one bone plays upon another. Where two or more tendons are contiguous, and afterwards ſeparate from each other, we generally find a common burſa divided into branches with which it communicates; and a few burſæ of contiguous tendons communicate with each other.—Some, in healthy children, communicate with the cavities of the joints; and in many old people he has ſeen ſuch communication formed by uſe or worn by friction, independent of diſeaſe.

Their proper membrane is thin and tranſparent, but very denſe, and capable of confining air or any other fluid. It is joined to the neighbouring parts by the common cellular ſubſtance. Between the burſa and the hard ſubſtance of bone a thin layer of cartilage or of tough membrane is very generally interpoſed. To the cellular ſubſtance on the outſide of the burſa, the adipoſe ſubſtance is connected: except where the burſa covers a tendon, cartilage, or bone, much expoſed to preſſure or friction.

In ſeveral places a maſs of fat, covered with the continuation of the membrane of the burſa, projects into its cavity. The edges of this are divided into fringes.

The inner ſide of the membrane is ſmooth, and is extremely ſlippery from the liquor ſecreted in it.

9 Their ſtructure compared with that of the capſular ligaments of the joints.

The ſtructure of the burſæ bears a ſtrong reſemblance to the capſular ligaments of the joints. 1. The inner layer of the ligament, like that of the burſæ, is thin and denſe. 2. It is connected to the external ligaments by the common cellular ſubſtance. 3. Between it and the bones, layers of cartilage, or the articular cartilages, are interpoſed. 4. At the ſides of the joints, where it is not ſubject to violent preſſure and friction, the adipoſe ſubſtance is connected with the cellular membrane. 5. Within the cavities of the joints we obſerve maſſes of fat projecting, covered with ſimilar blood veſſels, and with ſimilar fimbriæ hanging from

(D) It is now much doubted, however, whether the appearances in the joints which are uſually called *glands*, are any thing more than aſſemblages of fat.

(E) See *Deſcription of the Burſæ Mucoſæ*, &c.

Osteology. their edges. 6. In the knee the upper part of such a mass of fat forms what has been called the *mucilaginous gland of the joint*, and the under part projects into the bursa behind the ligament which ties the patella to the tibia. 7. The liquor which lubricates the bursæ has the same colour, consistence, and properties, as that of the joints, and both are affected in the same manner by heat, mineral acids, and ardent spirits. 8. In some places the bursæ constantly communicate with the cavities of the joints, in others they generally do so; from which we may infer a sameness of structure.

When we examine the fimbriæ common to the fatty bodies of the joints and bursæ, and which have been supposed to be the ducts of glands lodged within the masses of fat, we are not able to discover any glandular appearance within them. And although we observe many vessels dispersed upon the membranes of the fatty bodies and fimbriæ; and that we cannot doubt that these fimbriæ consist of ducts which contain a lubricating liquor, and can even press such a liquor from them; yet their cavities and orifices are so minute, that they are not discoverable even by the assistance of magnifying glasses. These fimbriæ, appear, therefore, to be ducts like those of the urethra, which prepare a mucilaginous liquor without the assistance of any knotty or glandular organ.

Upon the whole, the synovia seems to be furnished by invisible exhalent arteries, by the ducts of the fimbriæ, and by oil exuding from the adipose follicles by passages not yet discovered.

10 Of the skeleton. The word *skeleton*, which by its etymology implies simply a dry preparation, is usually applied to an assemblage of all the bones of an animal united together in their natural order. It is said to be a natural skeleton, when the bones are connected together by their own proper ligaments; and an artificial one, when they are joined by any other substance, as wire, &c.

The skeleton is generally divided into the head, trunk, and extremities. The first division includes the bones of the cranium and face. The bones of the trunk are the spine, ribs, sternum, and bones of the pelvis.

The upper extremity on each side consists of the two bones of the shoulder, viz. the scapula and clavicle; the bone of the arm or os humeri; the bones of the fore-arm, and those of the hand.

The lower extremity on each side of the trunk consists of the thigh-bone and the bones of the leg and foot.

Sect. II. *Of the Bones of the Head.*

The head is of a roundish figure, and somewhat oval (*s*). Its greatest diameter is from the forehead to the occiput; its upper part is called *vertex*, or crown of the head; its anterior or fore-part the face; and the upper part of this, *sinciput*, or forehead; its sides the temples; its posterior, or hind part, the *occiput*; and its inferior part the *basis*. Osteology.

The bones of the head may be divided into those of the cranium and face.

§ 1. *Bones of the Cranium and Face.*

There are eight bones of the cranium, viz. the coronal bone or os frontis; the two parietal bones or ossa bregmatis; the os occipitis; the two temporal bones; the sphenoid bone; and the os ethmoides or cribriforme.

Of these, only the os occipitis and ossa bregmatis 11
are considered as proper to the cranium; the rest being common both to the cranium and face.

These bones are all harder at their surface than in their middle: and on this account they are divided into two tables, and a middle spongy substance called *diploë*.

12 In this, as in all the other bones, we shall consider its Of the os frontis. figure, structure, processes, depressions, and cavities; and the manner in which it is articulated with the other bones.

The os frontis has some resemblance in shape to the shell of the cockle. Externally it is convex, its concave side being turned towards the brain. This bone, in the places where it is united to the temporal bones, is very thin, and has there no diploë. It is likewise exceedingly thin in that part of the orbit of the eye which is nearest to the nose. Hence it is, that a wound in the eye, by a sword, or any other pointed instrument, is sometimes productive of immediate death. In these cases, the sword passing through the weak part of the bone, penetrates the brain, and divides the nerves at their orgin; or perhaps opens some blood-vessel, the consequences of which are soon fatal.

We observe on the exterior surface of this bone five apophyses or processes, which are easily to be distinguished. One of these is placed at the bottom and narrowest part of the bone, and is called the nasal process, from its supporting the upper end of the bones of the nose. The four others are called angular or orbitar processes. They assist to form the orbits, which are the cavities on which the eyes are placed. In each of these orbits there are two processes, one at the interior or great angle, and the other at the exterior or little angle of the orbit. They are called the angular processes. Between these a ridge is extended in form of an arch, and on this the eyebrows are placed. It is called the orbitar or superciliary ridge, and in some measure covers and defends the globe of the eye. There is a hole in this for the passage of the frontal vessels and nerves. This arch is interrupted near the nose by a small pit, in which the tendon of the musculus obliquus major of the eye is fixed. From the under part of each superciliary ridge a thin plate runs a considerable way backwards, and has the name of *orbitar*; the external and fore part of this plate forms

(*s*) The bones of the fœtus being perfectly distinct, and the muscles in young persons not acting much, the shape of the head has been supposed to depend much on the management of children when very young. Vesalius, who has remarked the difference in people of different nations, observes, for instance, that the head of a Turk is conical, from the early use of the turban; whilst that of an Englishman is flattened by the chin-stay. Some of the latest physiologists suppose, with good reason, that this difference is chiefly owing to certain natural causes with which we are as yet unacquainted.

Osteology. forms a sinuosity for lodging the lachrymal gland. Between the orbitar plates there is a large discontinuation of the bone, which is filled up by the cribriform part of the os ethmoides.

On examining the inner surface of this bone at its under and middle part, we observe an elevation in form of a ridge, which has been called the *spinous process*; it ascends for some way, dividing the bone into two considerable fossæ, in which the anterior lobes of the brain are placed. To a narrow furrow in this ridge is attached the extremity of the falx, as the membrane is called, which divides the brain into two hemispheres. The furrow becoming gradually wider, is continued to the upper and back part of the bone. It has the falx fixed to it, and part of the longitudinal sinus lodged in it. Besides the two fossæ, there are many depressions, which appear like digital impressions, and owe their formation to the prominent circumvolutions of the brain.

In the fœtus, the forehead is composed of two distinct bones; so that in them the sagittal suture reaches from the os occipitis to the nose. This bone is almost everywhere composed of two tables and a diploë. These two tables separating from each other under the eyes, form two cavities, one on each side of the face, called the frontal sinuses. These sinuses are lined with a soft membrane, called *membrana pituitaria*. In these sinuses a mucus is secreted, which is constantly passing through two small holes into the nostrils, which it serves to moisten.

The os frontis is joined by sutures to many of the bones of the head, viz. to the parietal, maxillary, and temporal bones; to the os ethmoides; os sphenoides; os unguis; and ossa nasi. The suture which connects it with the parietal bones is called the *coronal suture*.

13 Of the parietal bones. The parietal bones are two in number; they are very thin, and even transparent in some places. The particular figure of each of these bones is that of an irregular square, bordered with indentations through its whole circumference, except at its lower part. It will be easily conceived, that these bones which compose the superior and lateral parts of the cranium, and cover the greatest part of the brain, form a kind of vault. On their inner surface we observe the marks of the vessels of the dura mater; and at their upper edge the groove for the superior longitudinal sinus.

The ossa parietalia are joined to each other by the sagittal suture; to the os sphenoides and ossa temporum by the squamous suture; to the os occipitis by the lambdoidal suture (G), so called from its resemblance to the Greek letter lambda; and to the os frontis by the coronal suture.

In the fœtus, the parietal bones are separated from the middle of the divided os frontis by a portion of the cranium then unossified.

14 Of the occipital bone. The occipital bone forms the posterior and inferior parts of the skull; it approaches nearly to the shape of a lozenge, and is indented throughout three parts of its circumference.

There is a considerable hole in the inferior portion of this bone, called the *foramen magnum*, through which Osteology. the medulla oblongata passes into the [illegible]. The nervi accessorii, and vertebral arteries, likewise pass through it. Behind the condyles are two holes for the passage of cervical veins into the lateral sinuses; and above them are two others for the passage of the sixth pair and accessory nerves out of the head. At the sides, and a little on the anterior part of the foramen magnum, are two processes, called the condyles, one on each side; they are of an oval figure, and are covered with cartilage.

The external surface of this bone has a large transverse arched ridge, under which the bone is very irregular, where it affords attachment to several muscles. On examining its inner surface, we may observe two ridges in form of a cross; one ascending from near the foramen magnum to the top of the bone; the upper end of this, in which the falx is fixed, is hollow, for lodging the superior longitudinal sinus; and the under end has the third process of the dura mater fixed to it. The other ridge, which runs horizontally, is likewise hollow for containing the lateral sinuses. Four fossæ are formed by the cross, two above and two below. In the former are placed the posterior lobes of the brain, and in the latter the lobes of the cerebellum

At the basis of the cranium, we observe the cuneiform process, (which is the name given to the great apophysis at the fore part of this bone); it serves for the reception of the medulla oblongata.

The os occipitis is of greater strength and thickness than either of the other bones of the head, though irregularly so; at its inferior part, where it is thinnest, it is covered by a great number of muscles.

This bone, from its situation, being more liable to be injured by falls than any other bone of the head, nature has wisely given it the greatest strength at its upper part, where it is most exposed to danger.

It is joined to the parietal bones by the lambdoidal suture, and to the ossa temporum by the additamentum of the temporal suture. It is likewise connected to the os sphenoides by the cuneiform process. It is by means of the os occipitis that the head is united to the trunk, the two condyles of this bone being connected to the superior oblique processes of the first vertebra of the neck.

15 Of the temporal bones. There are two temporal bones, one on each side.—We distinguish in them two parts; one of which is called the *squamous* or *scaly part*, and other *pars petrosa* from its hardness. This last is shaped like a pyramid.

Each of these divisions affords processes and cavities: externally there are three processes; one anterior, called the *zygomatic process*; one posterior, called the *mastoid mamillary process*, from its resemblance to a nipple; and one inferior, called the *styloid process*, because it is shaped like a stiletto, or dagger.

The cavities are, 1. The meatus auditorius externus. 2. A large fossa which serves for the articulation of the lower jaw; it is before the meatus auditorius, and immediately under the zygomatic process. 3. The stylo-mastoid

(G) The lambdoidal suture is sometimes very irregular, being composed of many small sutures, which surround so many little bones called *ossa triquetra*, though perhaps improperly, as they are not always triangular.

Osteology. ſtylo-maſtoid hole, ſo called from its ſituation between the ſtyloid and maſtoid proceſſes; it is likewiſe ſtyled the aqueduct of Fallopius, and affords a paſſage to the portio dura of the auditory or ſeventh part of nerves. 4. Below, and on the fore part of the laſt foramen, we obſerve part of the jugular foſſa, in which the beginning of the internal jugular vein is lodged. Anterior and ſuperior to this foſſa is the orifice of a foramen, through which paſſes the carotid artery. This foramen runs firſt upwards and then forwards, forming a kind of elbow, and terminates at the end of the os petroſum.—At this part of each temporal bone, we may obſerve the opening of the Euſtachian tube, a canal which paſſes from the ear to the back part of the noſe.

In examining the internal ſurface of theſe bones, we may remark the triangular figure of their petrous part which ſeparates two foſſæ; one ſuperior and anterior; the other inferior and poſterior: the latter of theſe compoſes part of the foſſa, in which the cerebellum is placed; and the former, a portion of the leaſt foſſa for the baſis of the brain. On the poſterior ſide of the pars petroſa, we obſerve the meatus auditorius internus, into which enters the double nerve of the ſeventh pair. On the under ſide of this proceſs, part of a hole appears, which is common to the temporal and occipital bones; through it the lateral ſinus, the eighth pair, and acceſſory nerves, paſs out of the head.

The pars petroſa contains ſeveral little bones called the bones of the ear; which, as they do not enter into the formation of the cranium, ſhall be deſcribed when we are treating of the organs of hearing.

The oſſa temporum are joined to the oſſa malarum, by the zygomatic ſutures; to the parietal bones by the ſquamous ſutures; to the os occipitis, by the lambdoidal ſuture; and to the ſphenoid bone, by the ſuture of that name.

16 Of the os ſphenoides.

This bone, from its ſituation amidſt the other bones of the head, has been ſometimes called *cuneiforme*. It is of a very irregular figure, and has been compared to a bat with its wings extended.

It is commonly divided into its middle part or body, and its ſides or wings.

The fore part of the body has a ſpine or ridge, which makes part of the ſeptum narium. The upper part of each wing forms a ſhare of the temple. The fore part of this belongs to the orbit; while the under and back part, termed *ſpinous proceſs*, is lodged in the baſe of the ſkull at the point of the pars petroſa. But two of the moſt remarkable proceſſes are the pterygoid or aliform, one on each ſide of the body of the bone, and at no great diſtance from it. Each of theſe proceſſes is divided into two wings, and of theſe the exterior one is the wideſt. The other terminates in a hook-like proceſs.

The internal ſurface of this bone affords three foſſæ. Two of theſe are formed by the wings of the bone, and make part of the leſſer foſſæ of the baſis of the cranium. The third, which is ſmaller, is on the top of the body of the bone; and is called *ſella turcica*, from its reſemblance to a Turkiſh ſaddle. This foſſa, in which the pituitary gland is placed, has poſteriorly and anteriorly proceſſes called the *clinoid proceſſes*.

There are twelve holes in this bone, viz. ſix on each ſide. The firſt is the paſſage of the optic nerve and ocular artery; the ſecond, or large ſlit, tranſmits the third, fourth, ſixth, and firſt part of the fifth pair of nerves with the ocular vein; the third hole gives paſſage to the ſecond branch of the fifth pair; and the fourth hole to the third branch of the fifth pair of nerves. The fifth hole is the paſſage of the artery of the dura mater. The ſixth hole is ſituated above the pterygoid proceſs of the ſphenoid bone: through it a reflected branch of the ſecond part of the fifth pair paſſes. Osteology.

Within the ſubſtance of the os ſphenoides there are two ſinuſes ſeparated by a bony plate. They are lined with the pituitary membrane; and, like the frontal ſinuſes, ſeparate a mucus which paſſes into the noſtrils.

The os ſphenoides is joined to all the bones of the cranium; and likewiſe to the oſſa maxillaria, oſſa malarum, oſſa palati, and vomer.

This bone makes part of the baſis of the ſkull, aſſiſts in forming the orbits, and affords attachment to ſeveral muſcles.

The os ethmoides is ſituated at the fore part of the baſis of the cranium, and is of a very irregular figure. From the great number of holes with which it is pierced, it is ſometimes called *os cribriforme*, or ſieve-like bone.

17 Of the os ethmoides or cribriforme.

It conſiſts of a middle part and two ſides. The middle part is formed of a thin bony plate, in which are an infinite number of holes that afford a paſſage to filaments of the olfactory nerve. From the middle of this plate, both on the outſide, and from within, there riſes up a proceſs, which may be eaſily diſtinguiſhed. The inner one is called *criſta galli*, from its ſuppoſed reſemblance to a cock's comb. To this proceſs the falx of the dura mater is attached. The exterior proceſs, which has the ſame common baſis as the criſta galli, is a fine lamella which is united to the vomer; and divides the cavity of the noſtrils, though unequally, it being generally a little inclined to one ſide.

The lateral parts of this bone are compoſed of a cellular ſubſtance; and theſe cells are ſo very intricate, that their figure or number cannot be deſcribed. Many writers have on this account called this part of the bone the *labyrinth*. Theſe cells are externally covered with a very thin bony lamella. This part of the bone is called the *os planum*, and forms part of the orbit.

The different cells of this bone, which are numerous, and which are everywhere lined with the pituitary membrane, evidently ſerve to enlarge the cavity of the noſe, in which the organ of ſmelling reſides.

This bone is joined to the os ſphenoides, os frontis, oſſa maxillaria, oſſa palati, oſſa naſi, oſſa unguis, and vomer.

The ancients, who conſidered the brain as the ſeat of all the humours, imagined that this viſcus diſcharged its redundant moiſture through the holes of the ethmoid bone. And the vulgar ſtill think, that abſceſſes of the brain diſcharge themſelves through the mouth and ears, and that ſnuff is liable to get into the head; but neither ſnuff nor the matter of an abſceſs are more capable of paſſing through the cribriform bone, than the ſeroſity which they ſuppoſed was diſcharged through it in a common cold. All the holes of the ethmoid bone are filled up with the branches of the olfactory nerve. Its inner part is likewiſe covered with the dura mater, and its cells are everywhere lined with

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with the pituitary membrane; so that neither matter nor any other fluid can possibly pass through this bone either externally or internally. Matter is indeed sometimes discharged through the nostrils; but the seat of the disease is in the sinuses of the nose, and not in the brain; and imposthumations are observed to take place in the ear, which suppurate and discharge themselves externally.

Before we leave the bones of the head, we wish to make some general observations on its structure and figure. As the cranium might have been composed of a single bone, the articulation of its several bones being absolutely without motion, it may be asked perhaps, Why such a multiplicity of bones, and so great a number of sutures? Many advantages may possibly arise from this plurality of bones and sutures, which may not yet have been observed. We are able, however, to point out many useful ends, which could only be accomplished by this peculiarity of structure. In this, as in all the other works of nature, the great wisdom of the Creator is evinced, and cannot fail to excite our admiration and gratitude.

The cranium, by being divided into several bones, grows much faster and with greater facility, than if it was composed of one piece only. In the fœtus, the bones, as we have before observed, are perfectly distinct from each other. The ossification begins in the middle of each bone, and proceeds gradually to the circumference. Hence the ossification, and of course the increase of the head, is carried on from an infinite number of points at the same time, and the bones consequently approach each other in the same proportion. To illustrate this doctrine more clearly, if it can want further illustration, suppose it necessary for the parietal bones which compose the upper part of the head, to extend their ossification, and form the fore part of the head likewise.—Is it not evident, that this process would be much more tedious than it is now, when the os frontis and the parietal bones are both growing at the same time? Hence it happens, that the heads of young people, in which the bones begin to touch each other, increase slowly; and that the proportionate increase of the volume of the head is greater in three months in the fœtus, than it is perhaps in twenty-four months at the age of fourteen or fifteen years.

The sutures, exclusive of their advantages in suspending the processes of the dura mater, are evidently of great utility in preventing the too great extent of fractures of the skull.—Suppose, for instance, that by a fall or blow, one of the bones of the cranium becomes fractured. The fissure, which in a head composed of only one bone, would be liable to extend itself through the whole of it, is checked and sometimes perhaps stopped by the first suture it meets, and the effects of the injury are confined to the bone on which the blow was received. Ruysch indeed, and some others, will not allow the sutures to be of any such use; but cases have been met with where they seemed to have had this effect, and in young subjects their utility in this respect must be still more obvious.

The spherical shape of the head seems likewise to render it more capable of resisting external violence than any other shape would do. In a vault, the parts mutually support and strengthen each other, and this happens in the cranium.

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§ 2. *Proper Bones of the Face.*

15
Of the face.

The face, which consists of a great number of bones, is commonly divided into the upper and lower jaw. The upper jaw consists of thirteen bones, exclusive of the teeth. Of these, six are placed on each side of the maxilla superior, and one in the middle.

The bones, which are in pairs, are the ossa malarum, ossa maxillaria, ossa nasi, ossa unguis, ossa palati, and ossa spongiosa inferiora. The single bone is the vomer.

16
Of the ossa malarum.

These are the prominent square bones which are placed under the eyes, forming parts of the orbits and the upper part of the cheeks. Each of them affords three surfaces: one exterior and a little convex; a second superior and concave, forming the inferior part and sides of the orbit; and a third posterior, irregular, and hollowed for the lodgment of the lower part of the temporal muscle.

The angles of each bone form four processes, two of which may be called *orbitar processes:* of these the upper one is joined by suture to the os frontis, and that below to the maxillary bone. The third is connected with the os sphenoides by means of the transverse suture; and the fourth is joined to the zygomatic process of the temporal bone, with which it forms the zygoma.

17
Of the ossa maxillaria superiora.

These bones, which are of a very irregular figure, are so called because they form the most considerable portion of the upper jaw. They are two in number, and generally remain distinct through life.

Of the many processes which are to be seen on these bones, and which are connected with the bones of the face and skull, we shall describe only the most remarkable.

One of these processes is at the upper and fore part of the bone, making part of the side of the nose, and called the *nasal process*. Another forms a kind of circular sweep at the inferior part of the bone, in which are the alveoli or sockets for the teeth: this is called the *alveolar process*. A third process is united to the os malæ on each side. Between this and the nasal process there is a thin plate, which forms a share of the orbit, and lies over a passage for the superior maxillary vessels and nerves.—The alveolar process has posteriorly a considerable tuberosity or its internal surface, called the *maxillary tuberosity*.

Behind the alveolar process we observe two horizontal lamellæ, which uniting together, form part of the roof of the mouth, and divide it from the nose. The hollowness of the roof of the mouth is owing to this partition's being seated somewhat higher than the alveolar process.—At the fore part of the horizontal lamellæ there is a hole called *foramen incisivum*, through which small blood vessels and nerves go between the mouth and nose.

In viewing these bones internally, we observe a fossa in the inferior portion of the nasal process, which, with the os unguis and os spongiosum inferius, forms a passage for the lachrymal duct.

Where these two bones are united to each other, they project somewhat upwards and forwards, leaving between them a furrow, into which the lower portion of the septum nasi is admitted.

Each of these bones being hollow, a considerable si-

Osteology. nus is formed under its orbitar part. This cavity, which is usually named after Highmore, though it was described by Fallopius and others before his time, is lined with the pituitary membrane. It is intended for the same purposes as the other sinuses of the nose, and opens into the nostrils.

The ossa maxillaria are connected with the greater part of the bones of the face and cranium, and assist in forming not only the cheeks, but likewise the palate, nose, and orbits.

21 Of the ossa nasi. The ossa nasi form two irregular squares. They are thicker and narrower above than below. Externally they are somewhat convex, and internally slightly concave. These bones constitute the upper part of the nose. At their fore part they are united to each other, above to the os frontis, by their sides to the ossa maxillaria superiora, posteriorly and interiorly to the septum narium, and below to the cartilages that compose the rest of the nostrils.

22 Of the ossa unguis. These little transparent bones owe their name to their supposed resemblance to a finger nail. Sometimes they are called *ossa lachrymalia*, from their concurring with the nasal process of each maxillary bone in forming a lodgment for the lachrymal sac and duct.

The ossa unguis are of an irregular figure. Their external surface consists of two smooth parts, divided by a middle ridge. One of these parts, which is concave and nearest to the nose, serves to support the lachrymal sac and part of the lachrymal duct. The other, which is flat, forms a small part of the orbit.

23 Of the ossa palati. Each of these bones is connected with the os frontis, os ethmoides, and os maxillare superius.

These bones, which are situated at the back part of the roof of the mouth, between the os sphenoides and the ossa maxillaria superiora, are of a very irregular shape, and serve to form the nasal and maxillary fossa, and a small portion of the orbit. Where they are united to each other, they rise up into a spine on their internal surface. This spine appears to be a continuation of that of the superior maxillary bones, and helps to form the septum narium.

These bones are joined to the ossa maxillaria superiora, os ethmoides, os sphenoides, and vomer.

24 Of the vomer. This bone derives its name from its resemblance to a ploughshare. It is a long and flat bone, somewhat thicker at its back than at its fore part. At its upper part we observe a furrow extending through its whole length. The posterior and largest part of this furrow receives a process of the sphenoid bone. From this the furrow advances forwards, and becoming narrower and shallower, receives some part of the nasal lamella ethmoidea: the rest serves to support the middle cartilage of the nose.

The inferior portion of this bone is placed on the nasal spine of the maxillary and palate bones, which we mentioned in our description of the ossa palati.

The vomer is united to the os sphenoides, os ethmoides, ossa maxillaria superiora, and ossa palati. It forms part of the septum narium, by dividing the back part of the nose into two nostrils.

25 Of the ossa spongiosa superiora. The parts which are usually described by this name, do not seem to deserve to be distinguished as distinct bones, except in young subjects. They consist of a spongy lamella in each nostril, which is united to the spongy lamina of the ethmoid bone, of which they are by some considered as a part. Osteology.

Each of these lamellæ is largest from behind forwards; with its convex surface turned towards the septum narium, and its concave part towards the maxillary bone, covering the opening of the lachrymal duct into the nose.

These bones are covered with the pituitary membrane; and besides their connexion with the ethmoid bone, are joined to the ossa maxillaria superiora, ossa palati, and ossa unguis.

26 Of the maxilla inferior. The maxilla inferior, or lower jaw, which in its shape resembles a horse shoe, consists of two distinct bones in the fœtus; but these unite together soon after birth, so as to form only one bone. The upper edge of this bone, like the os maxillare superius, has an alveolar process, furnished with sockets for the teeth.

On each side the posterior part of the bone rises almost perpendicularly into two processes. The highest of these, called the coronoid process, is pointed and thin, and serves for the insertion of the temporal muscle. The other, or condyloid process, as it is called, is shorter and thicker, and ends in an oblong rounded head, which is received into a fossa of the temporal bone, and is formed for a moveable articulation with the cranium. This joint is furnished with a moveable cartilage. At the bottom of each coronoid process, on its inner part, we observe a foramen extending under the roots of all the teeth, and terminating at the outer surface of the bone near the chin. Each of these canals transmits an artery, vein, and nerve, from which branches are sent off to the teeth.

The lower jaw is capable of a great variety of motion. By sliding the condyles from the cavity towards the eminences on each side, we bring it horizontally forwards, as in biting; or we may bring the condyles only forward, and tilt the rest of the jaw backward, as in opening the mouth. We are likewise able to slide the condyles alternately backwards and forwards from the cavity to the eminence, and *vice versa*, as in grinding the teeth. The cartilages, by adapting themselves to the different inequalities in these several motions of the jaw, serve to secure the articulation, and to prevent any injuries from friction.

The alveolar processes are composed of an outer and inner bony plate, united together by thin partitions, which at the fore part of the jaw divide the processes into as many sockets as there are teeth. But at the back part of the jaw, where the teeth have more than one root, we find a distinct cell for each root. In both jaws these processes begin to be formed with the teeth; they likewise accompany them in their growth, and gradually disappear when the teeth are removed.

§ 3. *Of the Teeth.*

27 Of the teeth. The teeth are bones of a particular structure, formed for the purposes of mastication and the articulation of the voice. It will be necessary to consider their composition and figure, their number and arrangement, and the time and order in which they appear.

In each tooth we may distinguish a body, a neck, and a root or fangs.

The body of the tooth is that part which appears above

Osteology. above the gums. The root is fixed into the ſocket, and the neck is the middle part between the two.

The teeth are compoſed of two ſubſtances, viz. enamel and bone. The enamel, or the vitreous or cortical part of the tooth, is a white and very hard and compact ſubſtance peculiar to the teeth, and appears fibrous or ſtriated when broken. This ſubſtance is thickeſt on the grinding ſurface, and becoming gradually thinner, terminates inſenſibly at the neck of the tooth. Ruyſch * affirmed, that he could trace the arteries into the hardeſt part of the teeth; Leeuwenhoek † ſuſpected the fibres of the enamel to be ſo many veſſels; and Monro ‡ ſays, he has frequently injected the veſſels of the teeth in children, ſo as to make the inſide of the cortex appear perfectly red. But it is certain, that it is not tinged by a madder diet, and that no injection will ever reach it, ſo that it has no appearance of being vaſcular ||.

* *Theſaur.* 10. N° 27.
† *Arcan. Natur. continuat. Epiſt.*
‡ *Anat. of the Human Bones.*
|| *Hunter on the Teeth.*

The bony part, which compoſes the inner ſubſtance of the body, neck, and root of the tooth, reſembles other bones in its ſtructure, but it is much harder than the moſt compact part of bones in general. As a tooth when once formed receives no tinge from a madder diet, and as the minuteſt injections do not penetrate into its ſubſtance, this part of a tooth has, like the enamel, been ſuppoſed not to be vaſcular. But when we conſider that the fangs of a tooth are inveſted by a perioſteum, and that the ſwellings of theſe fangs are analogous to the ſwellings of other bones, we may reaſonably conclude, that there is a ſimilarity of ſtructure; and that this bony part has a circulation through its ſubſtance, although from its hardneſs we are unable to demonſtrate its veſſels.

In each tooth we find an inner cavity, into which enter an artery, vein, and nerve. This cavity begins by a ſmall opening, and becoming larger, terminates in the body of the tooth. In advanced life this hole ſometimes cloſes, and the tooth is of courſe rendered inſenſible.

The perioſteum ſurrounds the teeth from their fangs to a little beyond their bony ſockets, where we find it adhering to the gums. This membrane, while it encloſes the teeth, ſerves at the ſame time to line the ſockets; ſo that it may be conſidered as common to both.

The teeth are likewiſe ſecured in their ſockets by means of the gums; a red, vaſcular, firm, and elaſtic ſubſtance, that poſſeſſes but little ſenſibility. In the gums of infants we find a hard ridge extending through their whole length, but no ſuch ridge is to be ſeen in old people who have loſt their teeth.

The number of the teeth in both jaws at full maturity, uſually varies from twenty-eight to thirty-two. They are commonly divided into three claſſes, viz. inciſores, canini, and grinders or molares (H). The inciſores are the four teeth in the fore part of each jaw. Osteology. They have each of them two ſurfaces; one anterior and convex, the other poſterior and ſlightly concave, both of which terminate in a ſharp edge. They are called *inciſores* from their uſe in dividing the food. They are uſually broader and thicker in the upper than in the under jaw; and, by being placed ſomewhat obliquely, generally fall over the latter.

The canini derive their name from their reſemblance to a dog's tuſks, being the longeſt of all the teeth. We find one on each ſide of the inciſores, ſo that there are two canini in each jaw. Their fang reſembles that of the inciſores, but is much larger; and in their ſhape they appear like an inciſor with its edge worn off, ſo as to terminate in a narrow point.

Theſe teeth not being calculated for cutting and dividing the food like the inciſores, or for grinding it like the molares, ſeem to be intended for laying hold of ſubſtances (1).

The molares or grinders, of which there are ten in each jaw, are ſo called, becauſe from their ſhape and ſize they are fitted for grinding the food. Each of the inciſores and canini is furniſhed only with one fang; but in the molares of the under jaw we conſtantly find two fangs, and in thoſe of the upper jaw three fangs. Theſe fangs are ſometimes ſeparated into two points, and each of theſe points has ſometimes been deſcribed as a diſtinct fang.

The two firſt of the molares, or thoſe neareſt to the canine teeth on each ſide, differ from the other three, and are with great propriety named *bicuſpides* by Mr Hunter. They have ſometimes only one root, and ſeem to be of a middle nature between the inciſores and the larger molares. The two next are much larger. The fifth or laſt grinder on each ſide is ſmaller and ſhorter than the reſt; and from its not cutting the gum till after the age of twenty, and ſometimes not till much later in life, it is called *dens ſapientiæ*.

There is in the ſtructure and arrangement of all theſe teeth an art which cannot be ſufficiently admired. To underſtand it properly, it will be neceſſary to conſider the under jaw as a kind of lever, with its fixed points at its articulations with the temporal bones: it will be right to obſerve, too, that its powers ariſe from its different muſcles, but in elevations chiefly from the temporalis and maſſeter; and that the aliment conſtitutes the object of reſiſtance. It will appear, then, that the molares, by being placed neareſt the centre of motion, are calculated to preſs with a much greater force than the other teeth, independent of the grinding powers which they poſſeſs by means of the pterygoid muſcles; and that it is for this reaſon we put between them any hard body we wiſh to break.

The canini and inciſores are placed farther from this point, and of courſe cannot exert ſo much force; but they

(H) Mr Hunter has thought proper to vary this diviſion. He retains the old name of *inciſores* to the four fore teeth, but he diſtinguiſhes the canine teeth by the name of the *cuſpidati*. The two teeth which are next to theſe, and which have been uſually ranked with the molares, he calls the *bicuſpides*; and he gives the name of *grinders* only to the three laſt teeth on each ſide.

(1) Mr Hunter remarks of theſe teeth, that we may trace in them a ſimilarity in ſhape, ſituation, and uſe, from the moſt imperfectly carnivorous animal, which we believe to be the human ſpecies, to the lion, which is the moſt perfectly carnivorous.

Osteology. they are made for cutting and tearing the food, and this form ſeems to make amends for their deficiency in ſtrength.

There are examples of children who have come into the world with two, three, and even four teeth: but theſe examples are very rare; and it is ſeldom before the ſeventh, eighth, or ninth month after birth, that the inciſores, which are the firſt formed, begin to paſs through the gum. The ſymptoms of dentition, however, in conſequence of irritation from the teeth, frequently take place in the fourth or fifth month. About the twentieth or twenty-fourth month, the canini and two molares make their appearance.

The dangerous ſymptoms that ſometimes accompany dentition, are owing to the preſſure of the teeth on the gum, which they irritate ſo as to excite pain and inflammation. This irritation ſeems to occaſion a gradual waſting of the gum at the part, till at length the tooth makes its appearance.

The ſymptoms are more or leſs alarming, in proportion to the reſiſtance which the gum affords to the teeth, and according to the number of teeth which may chance to ſeek a paſſage at the ſame time. Were they all to appear at once, children would fall victims to the pain and exceſſive irritation; but nature has ſo very wiſely diſpoſed them, that they uſually appear one after the other, with ſome diſtance of time between each. The firſt inciſor that appears is generally in the lower jaw, and is followed by one in the upper jaw. Sometimes the canini, but more commonly one of the molares, begins to paſs through the gum firſt.

Theſe 20 teeth, viz. eight inciſores, four canini, and eight molares, are called *temporary* or *milk teeth*, becauſe they are all ſhed between the age of ſeven and 14, and are ſucceeded by what are called the *permanent* or *adult teeth*. The latter are of a firmer texture, and have larger fangs.

Theſe adult teeth being placed in a diſtinct ſet of alveoli, the upper ſockets gradually diſappear, as the under ones increaſe in ſize, till at length the temporary or upper teeth, having no longer any ſupport, conſequently fall out.

To theſe 20 teeth which ſucceed the temporary ones, 12 others are afterwards added, viz. three molares on each ſide in both jaws: and in order to make room for this addition, we find that the jaws gradually lengthen in proportion to the growth of the teeth; ſo that with 20 teeth, they ſeem to be as completely filled as they are afterwards with 32. This is the reaſon why the face is rounder and flatter in children than in adults.

With regard to the formation of the teeth, we may obſerve, that in a fœtus of four months, the alveolar groove appears only as a ſhallow longitudinal groove, divided by minute ridges into a number of intermediate depreſſions; in each of which we find a ſmall pulpy ſubſtance, ſurrounded by a vaſcular membrane. This pulp gradually oſſifies, and its lower part is lengthened out to form the fang. When the bony part of the tooth is formed, its ſurface begins to be incruſted with the enamel. How the latter is formed and depoſited, we are not yet able to determine. Osteology.

The rudiments of ſome of the adult teeth begin to be formed at a very early period, for the pulp of one of the inciſores may generally be perceived in a fœtus of eight months, and the offification begins in it ſoon after birth. The firſt bicuſpis begins to offify about the fifth or ſixth, and the ſecond about the ſeventh year. The firſt adult grinder cuts the gum about the 12th, the ſecond about the 18th, and the third, or *dens ſapientiæ*, uſually between the 20th and 30th year.

The teeth, like other bones, are liable to be affected by diſeaſe. Their removal is likewiſe the natural conſequence of old age; for as we advance in life, the alveoli fill up, and the teeth, eſpecially the inciſores, fall out. When this happens, the chin projects forward, and the face is much ſhortened.

§ 4. *Of the Os Hyoides* (κ).

28 The os hyoides, which is placed at the root of the tongue, was ſo called by the ancients on account of its ſuppoſed reſemblance to the Greek letter *υ*.

It will be neceſſary to diſtinguiſh in it, its body, horns, and appendices.

The body, which is the middle and broadeſt part of the bone, is ſo placed that it may be eaſily felt at the fore part of the throat. Anteriorly it is irregularly convex, and its inner ſurface is unequally concave. Its cornua, or horns, which are flat and a little bent, being much longer than the body part, may be deſcribed as forming the ſides of the *υ*. The appendices, or little horns, as they are called by M. Winſlow and ſome other writers, are two proceſſes which riſe up from the articulations of the cornua with the body, and are uſually connected with the ſtyloid proceſs on each ſide by means of a ligament.

The uſes of this bone are to ſupport the tongue and afford attachment to a great number of muſcles; ſome of which perform the motions of the tongue, while others act on the larynx and fauces.

Sect. III. *Of the Bones of the Trunk.*

29 The trunk of the ſkeleton conſiſts of the ſpine, the thorax, and the pelvis.

§ 1. *Of the Spine.*

30 The ſpine is compoſed of a great number of bones called *vertebræ*, forming a long bony column, in figure not much unlike the letter *ſ*. This column, which extends from the head to the lower part of the body, may be ſaid to conſiſt of two irregular and unequal pyramids, united to each other in that part of the loins where the laſt lumbar vertebra joins the os ſacrum.

The vertebræ of the upper and longeſt pyramid are called

(κ) This bone is very ſeldom preſerved with the ſkeleton, and cannot be included amongſt the bones of the head or in any other diviſion of the ſkeleton. Thomas Bartholin has perhaps very properly deſcribed it among the parts contained in the mouth; but the generality of anatomical writers have placed it, as it is here, after the bones of the face.

Osteology. called *true vertebræ*, in contradiſtinction to thoſe of the lowermoſt pyramid, which, from their being immoveable in the adult, are ſtyled *falſe vertebræ*. It is upon the bones of the ſpine that the body turns; and it is to this circumſtance they owe their name, which is derived from the Latin verb *vertere*, "to turn."

The true vertebræ are divided into three claſſes, of cervical, dorſal, and lumbar vertebræ.—The falſe vertebræ conſiſt of the os ſacrum and os coccygis.

In each vertebra, as in other bones, it will be neceſſary to remark the body of the bone, its proceſſes, and cavities.

The body, which is convex before, and concave behind, where it aſſiſts in forming the cavity of the ſpine, may be compared to part of a cylinder cut off tranſverſely.

Each vertebra affords ſeven proceſſes. The firſt is at the back part of the vertebra, and from its ſhape and direction is named the *ſpinous proceſs*. On each ſide of this are two others, which, from their ſituation with reſpect to the ſpine, are called *tranſverſe proceſſes*. The four others are ſtyled *oblique* or *articular proceſſes*. They are much ſmaller than the ſpinous or tranſverſe ones. Two of them are placed on the upper, and two on the lower part of each vertebra, riſing from near the baſis of each tranſverſe proceſs. They have gotten the name of *oblique proceſſes*, from their ſituation with reſpect to the proceſſes with which they are articulated; and they are ſometimes ſtyled *articular proceſſes*, from the manner in which they are articulated with each other; the two ſuperior proceſſes of one vertebra being articulated with the two inferior proceſſes of the vertebra above it. Each of theſe proceſſes is covered with cartilage at its articulation, and their articulations with each other are by a ſpecies of ginglimus.

In each vertebra, between its body and its proceſſes, we find a hole large enough to admit a finger. Theſe holes are foramina, correſpond with each other through all the vertebræ, and form the long bony channel in which the ſpinal marrow is placed. We may likewiſe obſerve four notches in each vertebra. Two of theſe notches are at the upper, and two at the lower part of the bone, between the oblique proceſſes and the body of the vertebra. Each of theſe notches meeting with a ſimilar opening in the vertebra above or below it, forms a foramen for the paſſage of blood veſſels, and of the nerves out of the ſpine.

The bones of the ſpine are united together by means of a ſubſtance, which in young ſubjects appears to be of a ligamentous, but in adults more of a cartilaginous nature. This intervertebral ſubſtance, which forms a kind of partition between the ſeveral vertebræ, is thicker and more flexible between the lumbar vertebræ than in the other parts of the ſpine, the moſt conſiderable motions of the trunk being performed on thoſe vertebræ. This ſubſtance being very elaſtic, the extenſion and flexion of the body, and its motion backwards and forwards, or to either ſide, are performed with great facility. This elaſticity ſeems to be the reaſon why people who have been long ſtanding, or have carried a conſiderable weight, are found to be ſhorter than when they have been long in bed. In the two firſt inſtances the intervertebral cartilages (as they are uſually called) are evidently more expoſed to compreſſion than when we are in bed in a horizontal poſture.

In advanced life theſe cartilages become [illegible] and of courſe loſe much of their [illegible] ſerve to account for the decrease in ſtature and the ſtooping forward which are obſervable in old people.

Beſides the connexion of the ſeveral vertebræ by means of this intervertebral ſubſtance, there are [illegible] ligaments. Strong ligaments, both external and internal, which unite the bones of the ſpine to each other. Their ſituation is alſo ſtrengthened by a variety of ſtrong muſcles that cover and ſurround the ſpine.

The bones of the ſpine are found to diminish in denſity, and to be leſs firm in their texture, in proportion as they increaſe in bulk; ſo that the lowermoſt vertebræ, though the largeſt, are not ſo heavy in proportion as the upper ones. By this means the ſize of theſe bones is increaſed without adding to their weight; a circumſtance of no little importance in a part like the ſpine, which, beſides flexibility and ſuppleneſs, ſeems to require lightneſs as one of its eſſential properties.

In very young children, each vertebra conſiſts of three bony pieces united by cartilages which afterwards oſſify.

There are ſeven vertebræ of the neck—they are of a firmer texture than the other bones of the ſpine. Their tranſverſe proceſſes are forked for the lodgment of muſcles, and at the bottom of each we obſerve a foramen, through which paſs the cervical artery and vein. The firſt and ſecond of theſe vertebræ muſt be deſcribed more particularly. The firſt approaches almoſt to an oval ſhape.—On its ſuperior ſurface it has two cavities which admit the condyles of the occipital bone with which it is articulated. This vertebra, which is called *atlas* from its ſupporting the head, cannot well be deſcribed as having either body or ſpinous proceſs, being a kind of bony ring. Anteriorly, where it is articulated to the odontoid proceſs of the ſecond vertebra, it is very thin. On its upper ſurface it has two cavities which admit the condyles of the occipital bone. By this connexion the head is allowed to move forwards and backwards, but has very little motion in any other direction. 31 Vertebræ of the neck.

The ſecond vertebra has gotten the name of *dentata*, from its having, at its upper and anterior part, a proceſs called the *odontoid* or *tooth-like proceſs*, which is articulated with the atlas, to which this ſecond vertebra may be ſaid to ſerve as an axis. This odontoid proceſs is of a cylindrical ſhape, ſomewhat flattened, however, anteriorly and poſteriorly. At its fore part where it is received by the atlas, we may obſerve a ſmooth, convex, articulating ſurface. It is by means of this articulation that the head performs its rotatory motion, the atlas in that caſe moving upon this odontoid proceſs as upon a pivot. But when this motion is in any conſiderable degree, or, in other words, when the head moves much either to the right or left, all the cervical vertebræ ſeem to aſſiſt, otherwiſe the ſpinal marrow would be in danger of being divided tranſverſely by the firſt vertebra.

The ſpinous proceſs of each of the cervical vertebræ is ſhorter, and their articular proceſſes more oblique, than in the other bones of the ſpine. 32 Vertebræ of the back.

Theſe 12 vertebræ are of a middle ſize between thoſe of the neck and loins. At their ſides we may obſerve two depreſſions, one at the upper and the other at the

Osteology. lower part of the body of each vertebra; which uniting with ſimilar depreſſions in the vertebræ above and below, form articulating ſurfaces, covered with cartilages, for receiving the heads of the ribs; and at the fore part of their tranſverſe proceſs (excepting the two laſt) we find an articulating ſurface for receiving the tuberoſity of the ribs.

33 Lumbar vertebræ. Theſe five vertebræ differ only from thoſe of the back in their being larger, and in having their ſpinous proceſſes at a greater diſtance from each other. The moſt conſiderable motions of the trunk are made on theſe vertebræ; and theſe motions could not be performed with ſo much eaſe, were the proceſſes placed nearer to each other.

34 Os ſacrum. The os ſacrum, which is compoſed of five or ſix pieces in young ſubjects, becomes one bone in more advanced age.

It is nearly of a triangular figure, its inferior portion being bent a little forwards. Its ſuperior part has two oblique proceſſes, which are articulated with the laſt of the lumbar vertebræ; and it has likewiſe commonly three ſmall ſpinous proceſſes, which gradually become ſhorter, ſo that the lowermoſt is not ſo long as the ſecond, nor the ſecond as the uppermoſt. Its tranſverſe proceſſes are formed into one oblong proceſs, which becomes gradually ſmaller as it deſcends. Its concave or anterior ſide is uſually ſmooth, but its poſterior convex ſide has many prominences (the moſt remarkable of which are the ſpinous proceſſes juſt now mentioned), which are filled up and covered with the muſcular and tendinous parts behind.

This bone has five pair of holes, which afford a paſſage to blood veſſels, and likewiſe to the nerves that are derived from the ſpinal marrow, which is continued even here, being lodged in a triangular cavity, that becomes ſmaller as it deſcends, and at length terminates obliquely at the lower part of this bone. Below the third diviſion of the os ſacrum, this canal is not completely bony as the reſt of the ſpine, being ſecured at its back part only by a very ſtrong membrane, ſo that a wound at this part muſt be extremely dangerous.

The os ſacrum is united laterally to the oſſa innominata or hip-bones, and below to the coccyx.

35 Os coccyx. The coccyx, which, like the os ſacrum, is in young people made up of three or four diſtinct parts, uſually becomes one bone in the adult ſtate.

It ſerves to ſupport the inteſtinum rectum; and, by its being capable of ſome degree of motion at its articulation with the ſacrum, and being like that bone bent forwards, we are enabled to ſit with eaſe.

This bone is nearly of a triangular ſhape, being broadeſt at its upper part, and from thence growing narrower to its apex, where it is not bigger than the little finger.

It has got its name from its ſuppoſed reſemblance to a cuckow's beak. It differs greatly from the vertebræ, being commonly without any proceſſes, and having no cavity for the ſpinal marrow, or foramina for the tranſmiſſion of nerves.

The ſpine, of which we have now finiſhed the anatomical deſcription, is deſtined for many great and important uſes. The medulla ſpinalis is lodged in its bony canal ſecure from external injury. It ſerves as a defence to the abdominal and thoracic viſcera, and at the ſame time ſupports the head, and gives a general firmneſs to the whole trunk. Osteology.

We have before compared it to the letter *ſ*, and its different turns will be found to render it not very unlike the figure of that letter.—In the neck we ſee it projecting ſomewhat forward to ſupport the head, which, without this aſſiſtance, would require a greater number of muſcles. Lower down, in the thorax, we find it taking a curved direction backwards, and of courſe increaſing the cavity of the cheſt. After this, in the loins, it again projects forwards in a direction with the centre of gravity, by which means we are eaſily enabled to keep the body in an erect poſture, for otherwiſe we ſhould be liable to fall forwards. Towards its inferior extremity, however, it again recedes backward, and thus aſſiſts in forming the pelvis, the name given to the cavity in which the urinary bladder, inteſtinum rectum, and other viſcera are placed.

If this bony column had been formed only of one piece, it would have been much more eaſily fractured than it is now: and by confining the trunk to a ſtiff ſituation, a variety of motions would have been altogether prevented, which are now performed with eaſe by the great number of bones of which it is compoſed.

It is firm, and yet to this firmneſs there is added a perfect flexibility. If it be required to carry a load upon the head, the neck becomes ſtiff with the aſſiſtance of its muſcles, and accommodates itſelf to the load, as if it was compoſed only of one bone.—In ſtooping likewiſe, or in turning to either ſide, the ſpine turns itſelf in every direction, as if all its bones were ſeparated from each other.

In a part of the body like the ſpine, that is made up of ſo great a number of bones, and intended for ſuch a variety of motion, there muſt be a greater danger of diſlocation than fracture; but we ſhall find, that this is very wiſely guarded againſt in every direction by the proceſſes belonging to each vertebra, and by the ligaments, cartilages, &c. by which theſe bones are connected with each other.

§ 2. *Of the Bones of the Thorax.*

The thorax, or cheſt, is compoſed of many bones, viz. the ſternum which is placed at its anterior part, twelve ribs on each ſide which make up its lateral parts, and the dorſal vertebræ which conſtitute its poſterior part. Theſe laſt have been already deſcribed. 36

37 Of the ſternum. The ſternum is the long bone which extends itſelf from the upper to the lower part of the breaſt anteriorly, and to which the ribs and the clavicles are articulated.

In children it is compoſed of ſeveral bones united by cartilages; but as we advance in life, moſt of theſe cartilages oſſify, and the ſternum in the adult ſtate is found to conſiſt only of three pieces, and ſometimes becomes one bone. It is however generally deſcribed as being compoſed of three parts—one ſuperior, which is broad, thick, and ſhort; and one in the middle, which is thinner, narrower, and longer than the other.

It terminates at its lower part by a third piece, which is called the *xyphoid*, or *ſword-like cartilage*, from its ſuppoſed reſemblance to the blade of a ſword, and becauſe in young ſubjects it is commonly in a cartilaginous ſtate.

We

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We have already obſerved, that this bone is articulated with the clavicle on each ſide. It is likewiſe joined to the fourteen true ribs, viz. ſeven on its right and ſeven on its left ſide.

38 Of the ribs.

The ribs are bones ſhaped like a bow, forming the ſides of the cheſt. There are twelve on each ſide. They are diſtinguiſhed into true and falſe ribs: The ſeven upper ribs which are articulated to the ſternum are called *true ribs*, and the five lower ones that are not immediately attached to that bone are called *falſe ribs*.

On the inferior and interior ſurface of each rib, we obſerve a ſinuoſity for the lodgment of an artery, vein, and nerve.

The ribs are not bony through their whole length, their anterior part being cartilaginous. They are articulated with the vertebræ and ſternum. Every rib (or at leaſt the greater number of them) has at its poſterior part two proceſſes; one at its extremity, called the *head of the rib*, by means of which it is articulated with the body of two vertebræ; and another, called its tuberoſity, by which it is articulated with the tranſverſe proceſs of the loweſt of theſe two vertebræ. The firſt rib is not articulated by its extremity to two vertebræ, being ſimply attached to the upper part of the firſt vertebra of the back. The ſeven ſuperior or true ribs are articulated anteriorly with the ſternum by their cartilages; but the falſe ribs are ſupported in a different manner—the eighth, which is the firſt of theſe ribs, being attached by its cartilages to the ſeventh; the ninth to the eighth, &c.

The two lowermoſt ribs differ likewiſe from all the reſt in the following particulars: They are articulated only with the body of a vertebra, and not with a tranſverſe proceſs; and anteriorly, their cartilage is looſe, not being attached to the cartilages of the other ribs; and this ſeems to be, becauſe the moſt conſiderable motions of the trunk are not performed on the lumbar vertebræ alone, but likewiſe on the two laſt vertebræ of the back: ſo that if theſe two ribs had been confined at the fore part like the other ribs, and had been likewiſe articulated with the bodies of two vertebræ, and with the tranſverſe proceſſes, the motion of the two laſt vertebræ, and conſequently of the whole trunk, would have been impeded.

The ribs help to form the cavity of the thorax; they afford attachment to different muſcles; they are uſeful in reſpiration; and they ſerve as a ſecurity to the heart and lungs.

§ 3. *Of the Bones of the Pelvis.*

39 The pelvis is compoſed of the os ſacrum, os coccygis, and two offa innominata. The two firſt of theſe bones were included in the account of the ſpine, to which they more properly belong.

In children, each os innominatum is compoſed of three diſtinct bones; but as we advance in life the intermediate cartilages gradually oſſify, and the marks of the original ſeparation diſappear, ſo that they become one irregular bone; ſtill, however, continuing to retain the names of ilium, iſchium, and pubis, by which their diviſions were originally diſtinguiſhed, and to be deſcribed as three different bones by the generality of anatomiſts. The os ilium forms the upper and moſt conſiderable part of the bone, the os iſchium its lower and poſterior portion, and the os pubis its fore part.

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40 Os ilium.

The os ilium or haunch-bone, is articulated poſteriorly to the os ſacrum by a firm cartilaginous ſubſtance, and is united to the os pubis before and to the os iſchium below. Its ſuperior portion is thin, and terminates in a ridge called the criſta or ſpine of the ilium, and more commonly known by the name of the haunch. This criſta riſes up like an arch, being turned ſomewhat outwards, ſo as to reſemble the wings of a phaeton.

Externally this bone is unequally prominent and hollowed for the lodgment of muſcles; internally we find it ſmooth and concave. At its lower part there is a conſiderable ridge on its inner ſurface. This ridge extends from the os ſacrum, and correſponds with a ſimilar prominence both on that bone and the iſchium; forms with the inner part of the offa pubis what in midwifery is termed the brim of the pelvis.

The criſta, or ſpine, which at firſt is an epiphyſis, has two conſiderable tuberoſities; one anteriorly, and the other poſteriorly, which is the largeſt of the two: Theſe, from their projecting more than the parts of the bone below them, have gotten the name of ſpinal proceſſes. From the anterior ſpinous proceſs, the ſartorius and tenſor vaginæ femoris muſcles have their origin; and below the poſterior proceſs we obſerve a conſiderable niche in the bone, which, in the recent ſubject, is formed into a large foramen, by means of a ſtrong ligament that is ſtretched over its lower part from the os ſacrum to the ſharp-pointed proceſs of the iſchium. This hole affords a paſſage to the great ſciatic nerve, and to the poſterior crural veſſels under the pyriform muſcle, part of which likewiſe paſſes out here.

41 Os iſchium.

The os iſchium, or hip-bone, which is of a very irregular figure, conſtitutes the lower lateral parts of the pelvis, and is commonly divided into its body, tuberoſity, and ramus. The body forms the lower and moſt conſiderable portion of the acetabulum, and ſends a ſharp-pointed proceſs backwards, called the ſpine of the iſchium. To this proceſs the ligament adheres, which was juſt now ſpoken of, as forming a foramen for the paſſage of the ſciatic nerve. The tuberoſity, which is the loweſt part of the trunk, and ſupports us when we ſit, is large and irregular, affording origin to ſeveral muſcles. From this tuberoſity we find the bone becoming thinner and narrower. This part, which has the name of ramus or branch, paſſes forwards and upwards, and concurs with the ramus of the os pubis, to form a large hole called the *foramen magnum iſchii*, or *thyroideum*, as it is ſometimes named from its reſemblance to a door or ſhield. This hole, which in the recent ſubject is cloſed by a ſtrong membrane called the obturator ligament, affords through its whole circumference attachment to muſcles, At its upper part where we obſerve a niche in the bone, it gives paſſage to the obturator veſſels and nerves, which go to the inner part of the thigh. Nature ſeems everywhere to avoid an unneceſſary weight of bone, and this foramen, no doubt, ſerves to lighten the bones of the pelvis.

42 Os pubis.

The os pubis or ſhare-bone, which with its fellow forms the fore part of the pelvis, is the ſmalleſt diviſion of the os innominatum. It is united to its fellow by

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In each os pubis we may diſtinguiſh the body of the bone, its angle, and ramus. The body or outer part is united to the os ilium. The angle comes forwards to form the ſymphyſis, and the ramus is a thin proceſs which unites with the ramus of the iſchium, to form the foramen thyroideum.

The three bones we have deſcribed as compoſing each os innominatum, all aſſiſt in forming the acetabulum, in which the head of the os femoris is received.

This cavity is everywhere lined with a ſmooth cartilage, excepting at its inner part, were we may obſerve a little foſſa, in which are lodged the mucilaginous glands of the joint. We may likewiſe notice the pit or depreſſion made by the round ligament, as it is improperly called, which, by adhering to this cavity and to the head of the thigh-bone, helps to ſecure the latter in the ſocket.

Theſe bones, which are united to each other and to the ſpine, by many very ſtrong ligaments, ſerve to ſupport the trunk, and to connect it with the lower extremities; and at the ſame time to form the pelvis or baſon, in which are lodged the inteſtines and urinary bladder, and in women the uterus; ſo that the ſtudy of this part of oſteology is of the utmoſt importance in midwifery.

It is worthy of obſervation, that in women the os ſacrum is uſually ſhorter, broader, and more hollowed, the oſſa ilia more expanded, and the inferior opening of the pelvis larger, than in men.

Sect. IV. *Of the Extremities.*

43 The parts of the ſkeleton conſiſt of the upper extremity and the lower.

§ 1. *Of the Upper Extremities.*

44 This conſiſts of the ſhoulder, the arm, and the hand.

1. Of the Shoulder.

45 The ſhoulder conſiſts of two bones, the clavicula and the ſcapula.

46 Of the Clavicula. The former, which is ſo named from its reſemblance to the key in uſe among the ancients, is a little curved at both its extremities like an Italic *f*. It is likewiſe called *jugulum*, or collar bone, from its ſituation. It is about the ſize of the little finger, but longer, and being of a very ſpongy ſubſtance, is very liable to be fractured. In this, as in other long bones, we may diſtinguiſh a body and two extremities. The body is rather flattened than rounded. The anterior extremity is formed into a ſlightly convex head, which is nearly of a triangular ſhape. The inferior ſurface of the head is articulated with the ſternum. The poſterior extremity, which is flatter and broader than the other, is connected to a proceſs of the ſcapula, called *acromion*. Both theſe articulations are ſecured by ligaments, and in that with the ſternum we meet with a moveable cartilage, to prevent any injury from friction.

The clavicle ſerves to regulate the motions of the ſcapula, by preventing it from being brought too much forwards, or carried too far backwards. It affords origin to ſeveral muſcles, and helps to cover and protect the ſubclavian veſſels, which derive their name from their ſituation under this bone. Osteology.

47 Of the Scapula. The ſcapula, or ſhoulder-blade, which is nearly of a triangular ſhape, is fixed to the poſterior part of the true ribs, ſomewhat in the manner of a buckler. It is of a very unequal thickneſs, and like all other broad flat bones, is ſomewhat cellular. Exteriorly it is convex, and interiorly concave, to accommodate itſelf to the convexity of the ribs. We obſerve in this bone three unequal ſides, which are thicker and ſtronger than the body of the bone, and are therefore termed its *coſtæ*. The largeſt of the three, called alſo the baſis, is turned towards the vertebræ. Another, which is leſs than the former, is below this; and the third, which is the leaſt of the three, is at the upper part of the bone. Externally the bone is elevated into a conſiderable ſpine, which riſing ſmall at the baſis of the ſcapula, becomes gradually higher and broader, and divides the outer ſurface of the bone into two foſſæ, The ſuperior of theſe, which is the ſmalleſt, ſerves to lodge the ſupra ſpinatus muſcle; and the inferior foſſa, which is much larger than the other, gives origin to the infra ſpinatus. This ſpine terminates in a broad and flat proceſs at the top of the ſhoulder, called the *proceſſus acromion*, to which the clavicle is articulated. This proceſs is hollowed at its lower part to allow a paſſage to the ſupra and infra ſpinati muſcles. The ſcapula has likewiſe another conſiderable proceſs at its upper part, which, from its reſemblance to the beak of a bird, is called the *coracoid proceſs*. From the outer ſide of this coracoid proceſs, a ſtrong ligament paſſes to the proceſſus acromion, which prevents a luxation of the os humeri upwards. A third proceſs begins by a narrow neck, and ends in a cavity called *glenoid*, for the connexion of the os humeri.

The ſcapula is articulated with the clavicle and os humeri, to which laſt it ſerves as a fulcrum; and by varying its poſition it affords a greater ſcope to the bones of the arm in their different motions. It likewiſe gives origin to ſeveral muſcles, and poſteriorly ſerves as a defence to the trunk.

2. Bones of the Arm.

48 The arm is commonly divided into two parts, which are articulated to each other at the elbow. The upper part retains the name of arm, properly ſo called, and the lower part is uſually called the fore-arm.

49 The arm is compoſed of a ſingle bone called *os humeri*. This bone, which is almoſt of a cylindrical ſhape, may be divided into its body and its extremities.

The upper extremity begins by a large, round, ſmooth head, which is admitted into the glenoid cavity of the ſcapula. On the upper and fore part of the bone there is a groove for lodging the long head of the biceps muſcle of the arm; and on each ſide of the groove, at the upper end of the bone, there is a tubercle to which the ſpinati muſcles are fixed.

The lower extremity has ſeveral proceſſes and cavities. The principal proceſſes are its two condyles, one exterior and the other interior, and of theſe the laſt is the largeſt. Between theſe two we obſerve two lateral protuberances, which, together with a middle cavity,

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vity, form as it were a kind of pulley upon which the motions of the fore-arm are chiefly performed. At each ſide of the condyles, as well exteriorly as interiorly, there is another eminence which gives origin to ſeveral muſcles of the hand and fingers. Poſteriorly and ſuperiorly, ſpeaking with reſpect to the condyles, we obſerve a deep foſſa which receives a conſiderable proceſs of the ulna; and anteriorly and oppoſite to this foſſa, we obſerve another, which is much leſs, and receives another proceſs of the ſame bone.

The body of the bone has at its upper and anterior part a furrow which begins from behind the head of the bone, and ſerves to lodge the tendon of a muſcle. The body of the os humeri is hollow through its whole length, and like all other long bones has its marrow.

This bone is articulated at its upper part to the ſcapula. This articulation, which allows motion every way, is ſurrounded by a capſular ligament that is ſometimes torn in luxation, and becomes an obſtacle to the eaſy reduction of the bone. Its lower extremity is articulated with the bones of the fore-arm.

50 Of the fore-arm.

The fore-arm is compoſed of two bones, the ulna and radius.

51 Of the ulna.

The ulna or elbow bone is much leſs than the os humeri, and becomes gradually ſmaller as it deſcends to the wriſt. At its upper part it has two proceſſes and two cavities. Of the two proceſſes, the largeſt, which is ſituated poſteriorly, and called the *olecranon*, is admitted into the poſterior foſſa of the os humeri. The other proceſs is placed anteriorly, and is called the *coronoid proceſs*. In bending the arm it enters into the anterior foſſa of the os humeri. This proceſs being much ſmaller than the other, permits the fore-arm to bend inwards; whereas the olecranon, which is ſhaped like a hook, reaches the bottom of its foſſa in the os humeri as ſoon as the arm becomes ſtraight, and will not permit the fore-arm to be bent backwards. The ligaments likewiſe oppoſe this motion.

Between the two proceſſes we have deſcribed, there is a conſiderable cavity called the ſigmoid cavity, divided into two foſſæ by a ſmall eminence, which paſſes from one proceſs to the other; it is by means of this cavity and the two proceſſes, that the ulna is articulated with the os humeri by ginglimus.

At the bottom of the coronoid proceſs interiorly, there is a ſmall ſigmoid cavity, which ſerves for the articulation of the ulna with the radius.

The body of the ulna is of a triangular ſhape: Its lower extremity terminates by a ſmall head and a little ſtyloid proceſs. The ulna is articulated above to the os humeri—both above and below to the radius, and to the wriſt at its lower extremity. All theſe articulations are ſecured by means of ligaments. The chief uſe of this bone ſeems to be to ſupport and regulate the motions of the radius.

52 Of the radius.

The radius, which is ſo named from its ſuppoſed reſemblance to the ſpoke of a wheel, is placed at the inſide of the fore-arm. It is ſomewhat larger than the ulna, but not quite ſo long as that bone. Its upper part is cylindrical, hollowed ſuperiorly to receive the outer condyle of the os humeri. Laterally it is admitted into the little ſigmoid cavity of the ulna, and the cylindrical part of the bone turns in this cavity in the motions of pronation and ſupination (L). This bone follows the ulna in flexion and extenſion, and may likewiſe be moved round its axis in any direction. The lower extremity of the radius is much larger and ſtronger than its upper part; the ulna, on the contrary, is ſmaller and weaker below than above; ſo that they ſerve to ſupply each other's deficiencies in both theſe parts.

On the external ſide of this bone, we obſerve a ſmall cavity which is deſtined to receive the lower end of the ulna; and its lower extremity is formed into a large cavity, by means of which it is articulated with the bones of the wriſt, and on this account it is ſometimes called *manubrium manus*. It ſupports the two firſt bones of the wriſt on the ſide of the thumb, whereas the ulna is articulated with that bone of the wriſt which correſponds with the little finger.

Through the whole length both of this bone and the ulna, a ridge is obſerved which affords attachment to an interoſſeous ligament. This ligament fills up the ſpace between the two bones.

3. Bones of the Hand.

53 Of the carpus.

The carpus or wriſt conſiſts of eight ſmall bones of an irregular ſhape, and diſpoſed in two unequal rows. Thoſe of the upper row are articulated with the bones of the fore-arm, and thoſe of the lower one with the metacarpus.

The ancient anatomiſts deſcribed theſe bones numerically; Lyſerus ſeems to have been the firſt who gave to each of them a particular name. The names he adopted are found on the figure of the bones, and are now pretty generally received, except the firſt, which inſtead of *κόνλοειδες* (the name given to it by Lyſerus, on account of its ſinus, that admits a part of the os magnum), has by later writers been named *Scaphoides* or *Naviculare*. This, which is the outermoſt of the upper row (conſidering the thumb as the outer ſide of the hand), is articulated with the radius; on its inner ſide it is connected with the os lunare, and below to the trapezium and trapezoides. Next to this is a ſmaller bone, called the *os lunare*; becauſe its outer ſide, which is connected with the ſcaphoides, is ſhaped like a creſcent. This is likewiſe articulated with the radius. On its inner ſide it joins the os cuneiforme: and anteriorly, the os magnum and os unciforme.

The os cuneiforme, which is the third bone in the upper row, is compared to a wedge, from its being broader above, at the back of the hand, than it is below. Poſteriorly it is articulated with the ulna, and anteriorly with the os unciforme.

Theſe three bones form an oblong articulating ſurface, covered by cartilage, by which the hand is connected with the fore-arm.

The os piſiforme, or pea-like bone, which is ſmaller than

(L) The motions of pronation and ſupination may be eaſily deſcribed. If the palm of the hand, for inſtance is placed on the ſurface of a table, the hand may be ſaid to be in a ſtate of pronation: but if the back part of the hand is turned towards the table, the hand will be then in a ſtate of ſupination.

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All theſe bones are convex towards the back, and ſlightly concave towards the palm of the hand; their articulating ſurfaces are covered with cartilages, and ſecured by many ſtrong ligaments, particularly by two ligamentous expanſions, called the external and internal annular ligaments of the wriſt. The former extends in an oblique direction from the os piſiforme to the ſtyloid proceſs of the radius, and is an inch and a half in breadth; the latter or internal annular ligament is ſtretched from the os piſiforme and os unciforme, to the os ſcaphoides and trapezium. Theſe annular ligaments likewiſe ſerve to bend down the tendons of the wriſt and fingers.

55 Of the metacarpus. The metacarpus conſiſts of four bones, which ſupport the fingers; externally they are a little convex, and internally ſomewhat concave, where they form the palm of the hand. They are hollow, and of a cylindrical ſhape.

At each extremity they are a little hollowed for their articulation; ſuperiorly with the bones of the carpus, and inferiorly with the firſt phalanx of the fingers, in the ſame manner as the ſeveral phalanges of the fingers are articulated with each other.

56 Of the fingers. The five fingers of each hand are compoſed of fifteen bones, diſpoſed in three ranks called phalanges: The bones of the firſt phalanx, which are articulated with the metacarpus, are the largeſt, and thoſe of the laſt phalanx the ſmalleſt. All theſe bones are larger at their extremities than in their middle part.

We obſerve at the extremities of the bones of the carpus, metacarpus, and fingers, ſeveral inequalities that ſerve for their articulation with each other; and theſe articulations are ſtrengthened by means of the ligaments which ſurround them.

It will be eaſily underſtood that this multiplicity of bones in the hand (for there are 27 in each hand) is eſſential to the different motions we wiſh to perform. If each finger was compoſed only of one bone inſtead of three, it would be impoſſible for us to graſp any thing.

§ 2. *Of the Lower Extremities.*

Each lower extremity is divided into four parts, viz. the os femoris, or thigh-bone: the rotula, or knee-pan; the leg; and the foot.

1. Of the Thigh.

57 Of the os femoris. The thigh is compoſed only of this bone, which is the largeſt and ſtrongeſt we have. It will be neceſſary to diſtinguiſh its body and extremities: Its body, which is of a cylindrical ſhape, is convex before and concave behind, where it ſerves to lodge ſeveral muſcles. Throughout two-thirds of its length we obſerve a ridge called *linea aſpera*, which originates from the trochanters, and after running for ſome way downwards, divides into two branches, that terminate in the tuberoſities at the lower extremity of the bone. Osteology.

At its upper extremity we muſt deſcribe the neck and ſmooth head of the bone, and likewiſe two conſiderable proceſſes: The head, which forms the greater portion of a ſphere unequally divided, is turned inwards, and received into the great cotyloid cavity of the os innominatum. At this part of the bone there is a little foſſa to be obſerved, to which the round ligament is attached, and which we have already deſcribed as tending to ſecure the head of this bone in the great acetabulum. The neck is almoſt horizontal, conſidered with reſpect to its ſituation with the body of the bone. Of the two proceſſes, the external one, which is the largeſt, is called trochanter major; and the other, which is placed on the inſide of the bone, trochanter minor. They both afford attachment to muſcles. The articulation of the os femoris with the trunk is ſtrengthened by means of a capſular ligament, which adheres everywhere round the edge of the great cotyloid cavity of the os innominatum, and ſurrounds the head of the bone.

The os femoris moves upon the trunk in every direction.

At the lower extremity of the bone are two proceſſes called the condyles, and an intermediate ſmooth cavity, by means of which it is articulated with the leg by ginglimus.

All round the under end of the bone there is an irregular ſurface where the capſular ligament of the joint has its origin, and where blood-veſſels go into the ſubſtance of the bone.

Between the condyles there is a cavity poſteriorly, in which the blood-veſſels and nerves are placed, ſecure from the compreſſion to which they would otherwiſe be expoſed in the action of bending the leg, and which would not fail to be hurtful.

At the ſide of each condyle externally, there is a tuberoſity, from whence the lateral ligaments originate, which are extended down to the tibia.

A ligament likewiſe ariſes from each condyle poſteriorly. One of theſe ligaments paſſes from the right to the left, and the other from the left to the right, ſo that they interſect each other, and for that reaſon are called the *croſs ligaments*.

The lateral ligaments prevent the motion of the leg upon the thigh to the right or left, and the croſs ligaments, which are alſo attached to the tibia, prevent the latter from being brought forwards.

In new born children all the proceſſes of this bone are cartilaginous.

2. The Rotula, or Knee-pan.

59 Of the rotula. The rotula, patella, or knee-pan, as it is differently called, is a flat bone about four or five inches in circumference, and is placed at the fore part of the joint of the knee. In its ſhape it is ſomewhat like the common figure of the heart, with its point downwards.

It is thinner at its edge than in its middle part; at its fore part it is ſmooth and ſomewhat convex; its poſterior ſurface, which is more unequal, affords an elevation in the middle which is admitted between the two condyles of the os femoris.

This bone is retained in its proper ſituation by a ſtrong ligament which everywhere ſurrounds it, and adheres

Osteology. adheres both to the tibia and os femoris; it is likewiſe firmly connected with the tibia by means of a ſtrong tendinous ligament of an inch in breadth, and upwards of two inches in length, which adheres to the lower part of the patella, and to the tuberoſity at the upper end of the tibia. On account of this connexion, it is very properly conſidered as an appendage to the tibia, which it follows in all its motions, ſo as to be to it what the olecranon is to the ulna. There is this difference, however, that the olecranon is a fixed proceſs; whereas the patella is moveable, being capable of ſliding from above downwards and from below upwards. This mobility is eſſential to the rotatory motion of the leg.

In very young children this bone is entirely cartilaginous.

The principal uſe of the patella ſeems to be to defend the articulation of the knee from external injury; it likewiſe tends to increaſe the power of the extenſor muſcles of the leg, by removing their direction farther from the centre of motion in the manner of a pulley.

60

3. Of the Leg.

The leg is compoſed of two bones: Of theſe the inner one, which is the largeſt, is called tibia; the other is much ſmaller, and named fibula.

61 Of the tibia.

The tibia, which is ſo called from its reſemblance to the muſical pipe of the ancients, has three ſurfaces, and is not very unlike a triangular priſm. Its poſterior ſurface is the broadeſt; anteriorly it has a conſiderable ridge called the ſhin, between which and the ſkin there are no muſcles. At the upper extremity of this bone are two ſurfaces, a little concave, and ſeparated from each other by an intermediate elevation. The two little cavities receive the condyles of the os femoris, and the eminence between them is admitted into the cavity which we ſpoke of as being between the two condyles; ſo that this articulation affords a ſpecimen of the complete ginglimus. Under the external edge of the upper end of this bone is a circular flat ſurface, which receives the head of the fibula.

At the lower and inner portion of the tibia, we obſerve a conſiderable proceſs called *malleolus internus*. The baſis of the bone terminates in a large tranſverſe cavity, by which it is articulated with the uppermoſt bone of the foot. It has likewiſe another cavity at its lower end and outer ſide, which is ſomewhat oblong, and receives the lower end of the fibula.

The tibia is hollow through its whole length.

62 Of the fibula.

The fibula is a ſmall long bone ſituated on the outſide of the tibia. Its ſuperior extremity does not reach quite ſo high as the upper part of the tibia, but its lower end deſcends ſomewhat lower. Both above and below, it is articulated with the tibia by means of the lateral cavities we noticed in our deſcription of that bone.

Its lower extremity is ſtretched out into a coronoid proceſs, which is flattened at its inſide, and is convex externally, forming what is called the *malleolus externus*, or *outer ankle*. This is rather lower than the malleolus internus of the tibia.

The body of this bone, which is irregularly triangular, is a little hollow at its internal ſurface, which is turned towards the tibia; and it affords like that bone, through its whole length, attachment to a ligament, which from its ſituation is called the interoſſeous ligament.

4. Of the Foot.

63

The foot conſiſts of the tarſus, metatarſus, and toes.

64 Of the tarſus.

The tarſus is compoſed of ſeven bones, viz. the aſtragalus, os calcis, os naviculare, os cuboides, and three others called cuneiform bones.

65 Of the aſtragalus.

The aſtragalus is a large bone with which both the tibia and fibula are articulated. It is the uppermoſt bone of the foot; it has ſeveral ſurfaces to be conſidered; its upper, and ſomewhat poſterior part, which is ſmooth and convex, is admitted into the cavity of the tibia. Its lateral parts are connected with the malleoli of the two bones of the leg; below, it is articulated with the os calcis, and its anterior ſurface is received by the os naviculare. All theſe articulations are ſecured by means of ligaments.

66 Of the os calcis.

The os calcis, or calcaneum, which is of a very irregular figure, is the largeſt bone of the foot. Behind, it is formed into a conſiderable tuberoſity called the heel; without this tuberoſity, which ſupports us in an erect poſture, and when we walk, we ſhould be liable to fall backwards.

On the internal ſurface of this bone, we obſerve a conſiderable ſinuoſity, which affords a paſſage to the tendon of a muſcle: and to the poſterior part of the os calcis, a ſtrong tendinous cord called *tendo achillis* (M), is attached, which is formed by the tendons of ſeveral muſcles united together. The articulation of this with the other bones is ſecured by means of ligaments.

67 Of the os naviculare.

The os naviculare, or ſcaphoides (for theſe two terms have the ſame ſignification), is ſo called on account of its reſemblance to a little bark. At its poſterior part, which is concave, it receives the aſtragalus; anteriorly it is articulated with the cuneiform bones, and laterally it is connected with the os cuboides.

68 Of the os cuboides.

The os cuboides forms an irregular cube. Poſteriorly it is articulated with the os calcis; anteriorly it ſupports the two laſt bones of the metatarſus, and laterally it joins the third cuneiform bone and the os naviculare.

69 Of the oſſa cuneiformia.

Each of the oſſa cuneiformia, which are three in number, reſembles a wedge, and from this ſimilitude their name is derived. They are placed next to the metatarſus by the ſides of each other, and are uſually diſtinguiſhed into *os cuneiforme externum*, *medium* or *minimum*, and *internum* or *maximum*. The ſuperior ſurface of theſe bones, from their wedge-like ſhape, is broader than that which is below, where they help to form the ſole of the foot; poſteriorly they are united to the os naviculare, and anteriorly they ſupport the three firſt metatarſal bones.

When theſe ſeven bones compoſing the tarſus are viewed together in the ſkeleton, they appear convex above, where they help to form the upper part of the foot; and concave underneath, where they form the hollow

(M) This tendon is ſometimes ruptured by jumping, dancing, or other violent efforts.

Osteology. hollow of the foot, in which the veſſels, tendons, and nerves of the foot, are placed ſecure from preſſure.

They are united to each other by very ſtrong ligaments, and their articulation with the foot is ſecured by a capſular and two lateral ligaments; each of the latter is covered by an annular ligament of conſiderable breadth and thickneſs, which ſerves to bind down the tendons of the foot, and at the ſame time to ſtrengthen the articulation.

The os cuneiforme externum is joined laterally to the os cuboides.

Theſe bones complete our account of the tarſus. Though what we have ſaid of this part of the oſteology has been very ſimple and conciſe, yet many readers may not clearly underſtand it: but if they will be pleaſed to view theſe bones in their proper ſituation in the ſkeleton, all that we have ſaid of them will be eaſily underſtood.

70 Of the metatarſus. The metatarſus is made up of five bones, whereas the metacarpus conſiſts only of four. The cauſe of this difference is, that in the hand the laſt bone of the thumb is not included among the metacarpal bones; whereas in the foot the great toe has only two bones. The firſt of theſe bones ſupports the great toe, and is much larger than the reſt, which nearly reſemble each other in ſize.

Theſe bones are articulated by one extremity with the cuneiform bones and the os cuboides, and by their other end with the toes.

71 Of the toes. Each of the toes, like the fingers, conſiſts of three bones, except the great toe, which is formed of two bones. Thoſe of the other four are diſtinguiſhed into three phalanges. Although the toes are more confined in their motion than the fingers, yet they appear to be perfectly fitted for the purpoſes they are deſigned for. In walking, the toes bring the centre of gravity perpendicular to the advanced foot; and as the ſoles of the feet are naturally concave, we can at pleaſure increaſe this concavity, and form a kind of vault, which adjuſts itſelf to the different inequalities that occur to us in walking; and which, without this mode of arrangement, would incommode us exceedingly, eſpecially when bare-footed. Osteology.

§ 4. *Of the Oſſa* Sesamoidea. 72

Beſides the bones we have already deſcribed, there are ſeveral ſmall ones that are met with only in the adult ſkeleton, and in perſons who are advanced in life; which, from their ſuppoſed general reſemblance to the ſeeds of the ſeſamum, are called *oſſa ſeſamoidea*. They are commonly to be ſeen at the firſt joint of the great toe, and ſometimes at the joints of the thumb; they are likewiſe now and then to be found at the lower extremity of the fibula, upon the condyles of the thigh-bone, under the os cuboides of the tarſus, and in other parts of the body. Their ſize and number ſeem conſtantly to be increaſed by age and hard labour; and as they are generally found in ſituations where tendons and ligaments are moſt expoſed to the action of muſcles, they are now generally conſidered as oſſified portions of ligaments or tendons.

The upper ſurface of theſe bones is uſually convex, and adherent to the tendon that covers it; the ſide which is next to the joint is ſmooth and flat. Though their formation is accidental, yet they ſeem to be of ſome uſe, by raiſing the tendons farther from the centre of motion, and conſequently increaſing the power of the muſcles. In the great toe and thumb they are likewiſe uſeful, by forming a groove for the flexor tendons.

EXPLANATION of the PLATES of OSTEOLOGY.

Plate XXI.

Fig. I. A Front View of the Male Skeleton.

A, The os frontis. B, The os parietale. C, The coronal ſuture. D, The ſquamous part of the temporal bones. E, The ſquamous ſuture. F, The zygoma. G, The maſtoid proceſs. H, The temporal proceſs of the ſphenoid bone. I, The orbit. K, The os malæ. L, The os maxillare ſuperius. M, Its naſal proceſs. N, The oſſa naſi. O, The os unguis. P, The maxilla inferior. Q, The teeth, which are ſixteen in number in each jaw. R, The ſeven cervical vertebræ, with their intermediate cartilages. S, Their tranſverſe proceſſes. T, The twelve dorſal vertebræ, with their intermediate cartilages. U, The five lumbar vertebræ. V, Their tranſverſe proceſſes. W, The upper part of the os ſacrum. X, Its lateral parts. The holes ſeen on its fore part are the paſſages of the undermoſt ſpinal nerves and ſmall veſſels. Oppoſite to the holes, the marks of the original diviſions of the bone are ſeen. Y, The os ilium. Z, Its creſt or ſpine. a, The anterior ſpinous proceſſes. b, The brim of the pelvis. c, The iſchiatic niche. d, The os iſchium. e, Its tuberoſity. f, Its ſpinous proceſs. g, Its crus. h, The foramen thyroideum. i, The os pubis. k, The ſymphyſis pubis. l, The crus pubis. m, The acetabulum. n, The ſeventh or laſt true rib. o, The twelfth or laſt falſe rib. p, The upper end of the ſternum. q, The middle piece. r, The under end, or cartilago enſiformis. s, The clavicle. t, The internal ſurface of the ſcapula. u, Its acromion. v, Its coracoid proceſs. w, Its cervix. x, The glenoid cavity. y, The os humeri. z, Its head, which is connected to the glenoid cavity. 1, Its external tubercle. 2, Its internal tubercle. 3, The groove for lodging the long head of the biceps muſcle of the arm. 4, The internal condyle. 5, The external condyle. Between 4 and 5, the trochlea. 6, The radius. 7, Its head. 8, Its tubercle. 9, The ulna. 10, Its coronoid proceſs. 11, 12, 13, 14, 15, 16, 17, 18, The carpus; compoſed of os naviculare, os lunare, os cuneiforme, os piſiforme, os trapezium, os trapezoides, os magnum, os unciforme. 19, The five bones of the metacarpus. 20, The two bones of the thumb. 21, The three bones of each of the fingers. 22, The os femoris. 23, Its head. 24, Its cervix. 25, The trochanter major. 26, The trochanter minor. 27, The internal condyle. 28, The external condyle. 29, The rotula. 30, The tibia. 31, Its head. 32, Its tubercle. 33, Its ſpine. 34, The malleolus internus. 35, The fibula. 36, Its head. 37, The malleolus externus. The tarſus is compoſed of, 38, The aſtragalus;

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lus; 39, the os calcis; 40, the os naviculare; 41, three offa cuneiformia, and the os cuboides, which is not ſeen in this figure. 42, The five bones of the metatarſus. 43, The two bones of the great toe. 44, The three bones of each of the ſmall toes.

Fig. 2. A Front View of the Skull.

A, The os frontis. B, The lateral part of the os frontis, which gives origin to part of the temporal muſcle. C, The ſuperciliary ridge. D, The ſuperciliary hole through which the frontal veſſels and nerves paſs. EE, the orbitar proceſſes. F, The middle of the tranſverſe ſuture. G, The upper part of the orbit. H, The foramen opticum. I, The foramen lacerum. K, The inferior orbitar fiſſure. L, The os unguis. M, The offa naſi. N, The os maxillare ſuperius. O, Its naſal proceſs. P, The external orbitar hole through which the ſuperior maxillary veſſels and nerves paſs. Q, The os malæ. R, A paſſage for ſmall veſſels into, or out of, the orbit. S, The under part of the left noſtril. T, The ſeptum narium. U, The os ſpongioſum ſuperius. V, The os ſpongioſum inferius. W, The edge of the alveoli, or ſpongy ſockets, for the teeth. X, The maxilla inferior. Y, The paſſage for the inferior maxillary veſſels and nerves.

Fig. 3. A Side View of the Skull.

A, The os frontis. B, The coronal ſuture. C, The os parietale. D, An arched ridge which gives origin to the temporal muſcle. E, The ſquamous ſuture. F, The ſquamous part of the temporal bone; and, farther forwards, the temporal proceſs of the ſphenoid bone. G, The zygomatic proceſs of the temporal bone. H, The zygomatic ſuture. I, The maſtoid proceſs of the temporal bone. K, The meatus auditorius externus. L, The orbitar plate of the frontal bone, under which is ſeen the tranſverſe ſuture. M, The pars plana of the ethmoid bone. N, The os unguis. O, The right os naſi. P, The ſuperior maxillary bone. Q, Its naſal proceſs. R, The two dentes inciſores. S, The dens caninus. T, The two ſmall molares. U, The three large molares. V, The os malæ. W, The lower jaw. X, Its angle. Y, The coronoid proceſs. Z, The condyloid proceſs, by which the jaw is articulated with the temporal bone.

Fig. 4. The Poſterior and Right ſide of the Skull.

A, The os frontis. BB, The offa parietalia. C, The ſagittal ſuture. D, The parietal hole, through which a ſmall vein runs to the ſuperior longitudinal ſinus. E, The lambdoid ſuture. FF, Offa triquetra. G, The os occipitis. H, The ſquamous part of the temporal bone. I, The maſtoid proceſs. K, The zygoma. L, The os malæ. M, The temporal part of the ſphenoid bone. N, The ſuperior maxillary bone and teeth.

Fig. 5. The External Surface of the Os Frontis.

A, The convex part. B, Part of the temporal foſſa. C, The external angular proceſs. D, The internal angular proceſs. E, The naſal proceſs. F, The ſuperciliary arch. G, The ſuperciliary hole. H, The orbitar plate.

Fig. 6. The Internal Surface of the Os Frontis.

AA, The ſerrated edge which aſſiſts to form the coronal ſuture. B. The external angular proceſs. C, The internal angular proceſs. D, The naſal proceſs. E, The orbitar plate. F, The cells which correſpond with thoſe of the ethmoid bone. G, The paſſage from the frontal ſinus. H, The opening which receives the cribriform plate of the ethmoid bone. I, The cavity which lodges the fore part of the brain. K, The ſpine to which the falx is fixed. L, The groove which lodges the ſuperior longitudinal ſinus.

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Plate XXII.

Fig. 1. A Back View of the Skeleton.

AA, The offa parietalia. B, The ſagittal ſuture. C, The lambdoid ſuture. D, The occipital bone. E, The ſquamous ſuture. F, The maſtoid proceſs of the temporal bone. G, The os malæ. H, The palate plates of the ſuperior maxillary bones. I, The maxilla inferior. K, The teeth of both jaws. L, The ſeven cervical vertebræ. M, Their ſpinous proceſſes. N, Their tranſverſe and oblique proceſſes. O, The laſt of the twelve dorſal vertebræ. P, The fifth or laſt lumbar vertebra. Q, The tranſverſe proceſſes. R, The oblique proceſſes. S, The ſpinous proceſſes. T, The upper part of the os ſacrum. U, The poſterior holes which tranſmit ſmall blood-veſſels and nerves. V, The under part of the os ſacrum which is covered by a membrane. W, The os coccygis. X, The os illium. Y, Its ſpine or creſt. Z, The iſchiatic niche. a, The os iſchium. b, Its tuberoſity. c, Its ſpine. d, The os pubis. e, The foramen hydroideum. f, The ſeventh or laſt true rib. g, The twelfth or laſt falſe rib. h, The clavicle. i, The ſcapula. k, Its ſpine. l, Its acromion. m, Its cervix. n, Its ſuperior coſta. o, Its poſterior coſta. p, Its inferior coſta. q, The os humeri. r, The radius. s, The ulna. t, Its olecranon. u, All the bones of the carpus, excepting the os pififorme, which is ſeen in Plate XXI. fig. 1. v, The five bones of the metacarpus. w, The two bones of the thumb. x, The three bones of each of the fingers. y, The two ſeſamoid bones at the root of the left thumb. z, The os femoris. 1, The trochanter major. 2, The trochanter minor. 3, The linea aſpera. 4, The internal condyle. 5, The external condyle. 66, The ſemilunar cartilages. 7, The tibia. 8, The malleolus internus. 9, The fibula. 10. The malleolus externus. 11, The tarſus. 12, The metatarſus. 13, The toes.

Fig. 2. The External Surface of the Left Os Parietale.

A, The convex ſmooth ſurface. B, The parietal hole. C, An arch made by the beginning of the temporal muſcle.

Fig. 3. The Internal Surface of the ſame Bone.

A, Its ſuperior edge, which, joined with the other, forms the ſagittal ſuture. B, The anterior edge, which aſſiſts in the formation of the coronal ſuture. C, The inferior edge for the ſquamous ſuture. D, The poſterior edge for the lambdoid ſuture. E, A depreſſion made by the lateral ſinus. FF, The prints of the arteries of the dura mater.

Fig. 4. The External Surface of the Left Os Temporum.

A, The ſquamous part. B, The maſtoid proceſs. C, The zygomatic proceſs. D, The ſtyloid proceſs. E, The petroſal proceſs. F, The meatus auditorius

Osteology. externus. G, The glenoid cavity for the articulation of the lower jaw. H, The foramen ſtylo-maſtoideum for the portio dura of the ſeventh pair of nerves. I, Paſſages for blood veſſels into the bone. K, The foramen maſtoideum through which a vein goes to the lateral ſinus.

Fig. 5. The Internal Surface of the Left Os Temporum.

A, The ſquamous part; the upper edge of which aſſiſts in forming the ſquamous ſuture. B, The maſtoid proceſs. C, The ſtyloid proceſs. D, The pars petroſa. E, The entry of the ſeventh pair, or auditory nerve. F, The foſſa, which lodges a part of the lateral ſinus. G, The foramen maſtoideum.

Fig. 6. The External Surface of the Osseous Circle, which terminates the meatus auditorius externus.

A, The anterior part. B, A ſmall part of the groove in which the membrana tympani is fixed.

N. B. This, with the ſubſequent bones of the ear, are here delineated as large as the life.

Fig. 7. The Internal Surface of the Osseous Circle.

A, The anterior part. B, The groove in which the membrana tympani is fixed.

Fig. 8. The Situation and Connexion of the Small Bones of the Ear.

A, The malleus. B, The incus. C, The os orbiculare. D, The ſtapes.

Fig. 9. The Malleus, with its Head, Handle, and Small Proceſſes.

Fig. 10. The Incus, with its Body, Superior and Inferior Branches.

Fig. 11. The Os Orbiculare.

Fig. 12. The Stapes, with its Head, Baſe, and two Crura.

Fig. 13. An Internal View of the Labyrinth of the Ear.

A, The hollow part of the cochlea, which forms a ſhare of the meatus auditorius internus. B, The veſtibulum. CCC, The ſemicircular canals.

Fig. 14. An External View of the Labyrinth.

A, The ſemicircular canals. B, The feneſtra ovalis which leads into the veſtibulum. C, The feneſtra rotunda which opens into the cochlea. D, The different turns of the cochlea.

Fig. 15. The Internal Surface of the Os Sphenoides.

AA, The temporal proceſſes. BB, The pterygoid proceſſes. CC, The ſpinous proceſſes. DD, The anterior clinoid proceſſes. E, The poſterior clinoid proceſs. F, The anterior proceſs which joins the ethmoid bone. G, The ſella turcica for lodging the glandula pituitaria. H, The foramen opticum. K, The foramen lacerum. L, The foramen rotundum. M, The foramen ovale. N, The foramen ſpinale.

Fig. 16. The External Surface of the Os Sphenoides.

AA, The temporal proceſſes. BB, The pterygoid proceſſes. CC, The ſpinous proceſſes. D, The proceſſus azygos. E, The ſmall triangular proceſſes which grow from the body of the bone. FF, The orifices of the ſphenoidal ſinuſes. G, The foramen lacerum, Osteology. H, The foramen rotundum. I, The foramen ovale. K, The foramen pterygoideum.

Fig. 17. The External View of the Os Ethmoides.

A, The naſal lamella. BB, The grooves between the naſal lamella and oſſa ſpongioſa ſuperiora. CC, The oſſa ſpongioſa ſuperiora. DD, The ſphenoidal cornua. See Fig. 16. E.

Fig. 18. The Internal View of the Os Ethmoides.

A, The criſta galli. B, The cribriform plate, with the different paſſages of the olfactory nerves. CC, Some of the ethmoidal cells. D, The right os planum. EE, The ſphenoidal cornua.

Fig. 19. The Right Sphenoidal Cornu.

Fig. 20. The Left Sphenoidal Cornu.

Fig. 21. The External Surface of the Os Occipitis.

A, The upper part of the bone. B, The ſuperior arched ridge. C, The inferior arched ridge. Under the arches are prints made by muſcles of the neck. DD, The two condyloid proceſſes which articulate the head with the ſpine. E, The cuneiform proceſs. F, The foramen magnum through which the ſpinal marrow paſſes. GG, The poſterior condyloid foramina which tranſmit veins into the lateral ſinuſes. HH, The foramina lingualia for the paſſage of the ninth pair of nerves.

Fig. 22. The Internal Surface of the Os Occipitis.

AA, The two ſides which aſſiſt to form the lambdoid ſuture. B, The point of the cuneiform proceſs where it joins the ſphenoid bone. CC, The prints made by the poſterior lobes of the brain. DD, Prints made by the lobes of the cerebellum. E, The cruciform ridge for the attachment of the proceſſes of the dura mater. F, The courſe of the ſuperior longitudinal ſinuſes. GG, The courſe of the two lateral ſinuſes. H, The foramen magnum. II, The poſterior condyloid foramina.

Plate XXIII.

Fig. 1. A Side View of the Skeleton.

AA, The oſſa parietalia. B, The ſagittal ſuture. C, The os occipitis. DD, The lambdoid ſuture. E, The ſquamous part of the temporal bone. F, The maſtoid proceſs. G, The meatus auditorius externus. H, The os frontis. I, The os malæ. K, The os maxillare ſuperius. L, The maxilla inferior. M, The teeth of both jaws. N, The ſeventh or laſt cervical vertebra. O, The ſpinous proceſſes. P, Their tranſverſe and oblique proceſſes. Q, The twelfth or laſt dorſal vertebra. R, The fifth or laſt lumbar vertebra. S, The ſpinous proceſſes. T, Openings between the vertebræ for the paſſage of the ſpinal nerves. U, The under end of the os ſacrum. V, The os coccygis. W, The os ilium. X, The anterior ſpinous proceſſes. Y, The poſterior ſpinous proceſſes. Z, The iſchiatic niche. a, The right os ilium. b, The oſſa pubis. c, The tuberoſity of the left os iſchium. d, The ſcapula. e, Its ſpine. f, The os humeri. g, The radius. h, The ulna. i, The carpus. k, The metacarpal bone of the thumb. l, The metacarpal bones of the fingers. m, The two bones of the thumb. n, The three bones of each of the fingers. o, The os femoris.

Osteology. femoris. p, Its head. q, The trochanter major. r, The external condyle. s, The rotula. t, The tibia. u, The fibula. v, The malleolus externus. w, The astragalus. x, The os calcis. y, The os naviculare. z, The three ossa cuneiformia. 1, The os cuboides. 2, The five metatarsal bones. 3, The two bones of the great toe. 4, The three bones of each of the small toes.

Fig. 2. A View of the Internal Surface of the Base of the Skull.

AAA, The two tables of the skull with the diploë. BB, The orbitar plates of the frontal bone. C, The crista galli, with cribriform plate of the ethmoidal bone on each side of it, through which the first pair of nerves pass. D, The cuneiform process of the occipital bone. E, The cruciform ridge. F, The foramen magnum for the passage of the spinal marrow. G, The zygoma, made by the joining of the zygomatic processes of the os temporum and os malæ. H, The pars squamosa of the os temporum. I, The pars mammillaris. K, The pars petrosa. L, The temporal process of the sphenoid bone. MM, The anterior clinoid processes. N, The posterior clinoid process. O, The sella turcica. P, The foramen opticum, for the passage of the optic nerve and ocular artery of the left side. Q, The foramen lacerum, for the third, fourth, sixth, and first of the fifth pair of nerves and ocular vein. R, The foramen rotundum for the second of the fifth pair. S, The foramen ovale, for the third of the fifth pair. T, The foramen spinale, for the principal artery of the dura mater. U, The entry of the auditory nerve. V, The passage for the lateral sinus. W, The passage of the eighth pair of nerves. X, The passage of the ninth pair.

Fig. 3. A View of the External Surface of the Base of the Skull.

A, The two dentes incisores of the right side. B, The dens caninus. C, The two small molares. D, The three large molares. E, The foramen incisivum, which gives passage to small blood-vessels and nerves. F, The palate plates of the ossa maxillaria and palati, joined by the longitudinal and transverse palate sutures. G, The foramen palatinum posterius, for the palatine vessels and nerves. H, The os maxillare superius of the right side. I, The os malæ. K, The zygomatic process of the temporal bone. L, The posterior extremity of the ossa spongiosa. M, The posterior extremity of the vomer, which forms the back part of the septum nasi. N, The pterygoid process of the right side of the sphenoid bone. OO, The foramina ovalia. PP, The foramina spinalia. QQ, The passages of the internal carotid arteries. R, A hole between the point of each pars petrosa and cuneiform process of the occipital bone, which is filled up with a ligamentous substance in the recent subject. S, The passage of the left lateral sinus. T, The posterior condyloid foramen of the left side. U, The foramen mastoideum. V, The foramen magnum. W, The inferior orbitar fissure. X, The glenoid cavity, for the articulation of the lower jaw. Y, The squamous part of the temporal bone. Z, The mastoid process, at the inner side of which is a fossa for the posterior belly of the digastric muscle. a, The styloid process. b, The meatus auditorius externus. c, The left condyle of the occipital bone. d, The perpendicular occipital spine. ee, The inferior horizontal ridge of the occipital bone. ff, The superior horizontal ridge, which is opposite to the crucial ridge where the longitudinal sinus divides to form the lateral sinuses. ggg, The lambdoid future. h, The left squamous future. i, The parietal bone. Osteology.

Fig. 4. The anterior surface of the Ossa Nasi.

A, The upper part which joins the os frontis. B, The under end, which joins the cartilage of the nose. C, Their inner edge where they join each other.

Fig. 5. The posterior surface of the Ossa Nasi.

AA, Their cavity, which forms part of the arch of the nose. BB, Their ridge or spine, which projects a little to be fixed to the fore part of the septum narium.

Fig. 6. The external surface of the Os Maxillare Superius of the left side.

A, The nasal process. B, The orbitar plate. C, The unequal surface which joins the os malæ. D, The external orbitar hole. E, The opening into the nostril. F, The palate plate. G, The maxillary tuberosity. H, Part of the os palati. I, The two dentes incisores. K, The dens caninus. L, The two small dentes molares. M, The three large dentes molares.

Fig. 7. The internal surface of the Os Maxillare Superius and Os Palati.

A, The nasal process. BB, Eminences for the connexion of the os spongiosum inferius. D, The under end of the lachrymal groove. E, The antrum maxillare. F, The nasal spine, between which and B is the cavity of the nostril. G, The palate plate. H, The orbitar part of the os palati. I, The nasal plate. K, The future which unites the maxillary and palate bones. L, The pterygoid process of the palate bone.

Fig. 8. The external surface of the right Os Unguis.

A, The orbitar part. B, The lachrymal part. C, The ridge between them.

Fig. 9. The internal surface of the right Os Unguis.

This side of the bones has a furrow opposite to the external ridge; all behind this is irregular, where it covers part of the ethmoidal cells.

Fig. 10. The external surface of the left Os Malæ.

A, The superior orbitar process. B, The inferior orbitar process. C, The malar process. D, The zygomatic process. E, The orbitar plate. F, A passage for small vessels into or out of the orbit.

Fig. 11. The internal surface of the left Os Malæ.

A, The superior orbitar process. B, The inferior orbitar process. C, The malar process. D, The zygomatic process. E, The internal orbitar plate or process.

Fig. 12. The external surface of the right Os Spongiosum Inferius.

A, The anterior part. B, The hook-like process for covering part of the antrum maxillare. C, A small process which covers part of the under end of the lachrymal groove. D, The inferior edge turned a little outwards.

Fig.

Osteology.

Fig. 13. The internal surface of the Os Spongiosum Inferius.

A, The anterior extremity. B, The upper edge which joins the superior maxillary and palate bones.

Fig. 14. The posterior and external surface of the right Os Palati.

A, The orbitar process. B, The nasal lamella. C, The pterygoid process. D, The palate process.

Fig. 15. The anterior and external surface of the right Os Palati.

A, The orbitar process. B, An opening through which the lateral nasal vessels and nerves pass. C, The nasal lamella. D, The pterygoid process. E, The posterior edge of the palate process for the connexion of the velum palati. F, The inner edge by which the two ossa palati are connected.

Fig. 16. The right side of the Vomer.

A, The upper edge which joins the nasal lamella of the ethmoid bone and the middle cartilage of the nose. B, The inferior edge which is connected to the superior maxillary and palate bones. C, The superior and posterior part which receives the processus azygos of the sphenoid bone.

Fig. 17. The Maxilla Inferior.

A, The chin. B, The base and left side. C, The angle. D, The coronoid process. E, The condyloid process. F, The beginning of the inferior maxillary canal of the right side, for the entry of the nerve and blood vessels. G, The termination of the left canal. H, The two dentes incisores. I, The dens caninus. K, The two small molares. L, The three large molares.

Fig. 18. The different classes of the Teeth.

1, 2, A fore and back view of the two anterior dentes incisores of the lower jaw. 3, 4, Similar teeth of the upper jaw. 5, 6, A fore and back view of the dentes canini. 7, 8, The anterior dentes molares. 9, 10, 11, The posterior dentes molares. 12, 13, 14, 15, 16, Unusual appearances in the shape and size of the teeth.

Fig. 19. The external surface of the Os Hyoides.

A, The body. BB, The cornua. CC, The appendices.

Plate XXIV.

Fig. 1. A Posterior View of the Sternum and Clavicles, with the Ligament connecting the Clavicles to each other.

a, The posterior surface of the sternum. bb, The broken ends of the clavicles. cccc, The tubercles near the extremity of each clavicle. d, The ligament connecting the clavicles.

Fig. 2. A Fore View of the Left Scapula, and of a half of the Clavicle, with their Ligaments.

a, The spine of the scapula. b, The acromion. c, The inferior angle. d, Inferior costa. e, Cervix. f, Glenoid cavity, covered with cartilage for the arm bone. gg, The capsular ligament of the joint. h, Coracoid process. i, The broken end of the clavicle. k, Its extremity joined to the acromion. l, A ligament coming out single from the acromion to the coracoid process. m, A ligament coming out single from the acromion, and dividing into two, which are fixed to the coracoid process.

Fig. 3. The Joint of the Elbow of the Left Arm, with the Ligaments.

a, The os humeri. b, Its internal condyle. cc, The two prominent parts of its trochlea appearing through the capsular ligament. d, The ulna. e, The radius. f, The part of the ligament including the head of the radius.

Fig. 4. The Bones of the Right Hand, with the Palm in view.

a, The radius. b, The ulna. c, The scaphoid bone of the carpus. d, The os lunare. e, The os cuneiforme. f, The os pisiforme. g, Trapezium. h, Trapezoides. i, Capitatum. k, Unciforme. l, The four metacarpal bones of the fingers. m, The first phalanx. n, The second phalanx. o, The third phalanx. p, The metacarpal bone of the thumb. q, The first joint. r, The second joint.

Fig. 5. The Posterior View of the Bones of the Left Hand.

The explication of Fig. 4. serves for this figure; the same letters pointing out the same bones, though in a different view.

Fig. 6. The Upper Extremity of the Tibia, with the Semilunar Cartilages of the Joint of the Knee, and some Ligaments.

a, The strong ligament which connects the rotula to the tubercle of the tibia. bb, The parts of the extremity of the tibia, covered with cartilage, which appear within the semilunar cartilages. cc, The semilunar cartilages. d, The two parts of what is called the cross ligament.

Fig. 7. The Posterior View of the Joint of the Right Knee.

a, The os femoris cut. b, Its internal condyle. c, Its external condyle. d, The back part of the tibia. e, The superior extremity of the fibula. f, The edge of the internal semilunar cartilage. g, An oblique ligament. h, A larger perpendicular ligament. i, A ligament connecting the femur and fibula.

Fig. 8. The Anterior View of the Joint of the Right Knee.

b, The internal condyle. c, Its external condyle. d, The part of the os femoris, on which the patella moves. e, A perpendicular ligament. ff, The two parts of the crucial ligaments. gg. The edges of the two moveable semilunar cartilages. h, The tibia. i, The strong ligament of the patella. k, The back part of it where the fat has been dissected away. l, The external depression. m, The internal one. n, The cut tibia.

Fig. 9. A View of the Inferior Part of the Bones of the Right Foot.

a, The great knob of the os calcis. b, A prominence on its outside. c, The hollow for the tendons, nerves, and blood vessels. d, The anterior extremity of the os calcis. e, Part of the astragalus. f, Its head covered with cartilage. g, The internal prominence

Osteology. nence of the os naviculare. h, The os cuboides. i, The os cuneiforme internum; k,—Medium; l,—Externum. m, The metatarſal bones of the four leſſer toes. n, The firſt—o, The ſecond—p, The third phalanx of the four leſſer toes. q, The metatarſal bones of the great toe. r, Its firſt—s, Its ſecond joint.

Fig. 10. The Inferior ſurface of the two large Sesamoid Bones at the firſt joint of the Great Toe.

Fig. 11. The Superior View of the Bones of the Right Foot.

a, b, as in fig. 9. c, The ſuperior head of the aſtragalus. d, &c. as in fig. 9.

Fig. 12. The View of the Sole of the Foot, with its Ligaments.

a, The great knob of the os calcis. b, The hollow for the tendons, nerves, and blood veſſels. c, The ſheaths of the flexores pollicis and digitorum longi opened. d, The ſtrong cartilaginous ligament ſupporting the head of the aſtragalus. e, h, Two ligaments which unite into one, and are fixed to the metatarſal bone of the great toe. f, A ligament from the knob of the os calcis to the metatarſal bone of the little toe. g, A ſtrong triangular ligament, which ſupports the bones of the tarſus. i, The ligaments of the joints of the five metatarſal bones. Osteology.

Fig. 13. a, The head of the thigh bone of a child. b, The ligamentum rotundum connecting it to the acetabulum. c, The capſular ligament of the joint with its arteries injected. d, The numerous veſſels of the mucilaginous gland injected.

Fig. 14. The Back View of the Cartilages of the Larynx, with the Os Hyoides.

a, The poſterior part of the baſe of the os hyoides. bb, Its cornua. c, The appendix of the right ſide. d, A ligament ſent out from the appendix of the left ſide, to the ſtyloid proceſs of the temporal bone. e, The union of the baſe with the left cornua. ff, The poſterior ſides of (g) the thyroid cartilage. hh, Its ſuperior cornua. ii, Its inferior cornua. k, The cricoid cartilage. ll, The arytenoid cartilages. m, The entry into the lungs, named *glottis*. n, The epiglottis. oo, The ſuperior cartilages of the trachea. p, Its ligamentous back part.

Fig. 15. The Superior Concave ſurface of the Sesamoid Bones at the firſt joint of the Great Toe, with their Ligaments.

a, Three ſeſamoid bones. b, The ligamentous ſubſtance in which they are formed.

CHAP. II. OF THE SOFT PARTS IN GENERAL.

OF THE COMMON INTEGUMENTS, WITH THEIR APPENDAGES; AND OF THE MUSCLES.

73 ANATOMICAL writers uſually proceed to a deſcription of the muſcles after having finiſhed the oſteology; but we ſhall deviate a little from the common method, with a view to deſcribe every thing clearly and diſtinctly, and to avoid a tautology which would otherwiſe be unavoidable. All the parts of the body are ſo intimately connected with each other, that it ſeems impoſſible to convey a juſt idea of any one of them, without being in ſome meaſure obliged to ſay ſomething of others; and on this account we wiſh to mention in this place the names and ſituation of the principal viſcera of the body, that when mention is hereafter made of any one of them in the courſe of the work, the reader may at leaſt know where they are placed.

After this little digreſſion, the common integuments, and after them, the muſcles, will be deſcribed; we then propoſe to enter into an examination of the ſeveral viſcera, and their different functions. In deſcribing the brain, occaſion will be taken to ſpeak of the nerves and animal ſpirits. The circulation of the blood will follow the anatomy of the heart, and the ſecretions and other matters will be introduced in their proper places.

The body is divided into three great cavities. Of theſe the uppermoſt is formed by the bones of the cranium, and encloſes the brain and cerebellum.

The ſecond is compoſed of the vertebræ of the back, the ſternum, and true ribs, with the additional aſſiſtance of muſcles, membranes, and common integuments, and is called the *thorax*.—It contains the heart and lungs.

The third, and inferior cavity, is the abdomen. It is ſeparated from the thorax by means of the diaphragm, and is formed by the lumbar vertebræ, the os ſacrum, the oſſa innominata, and the falſe ribs, to which we may add the peritonæum, and a variety of muſcles. This cavity encloſes the ſtomach, inteſtines, omentum or cawl, liver, pancreas, ſpleen, kidneys, urinary bladder, and parts of generation. 74 Cuticle.

Under the diviſion of common integuments are uſually included the epidermis, or ſcarf-ſkin, the reticulum mucoſum of Malpighi, the cutis, or true ſkin, and the membrana adipoſa. The hair and nails, as well as the ſebaceous glands, may be conſidered as appendages to the ſkin.

Sect. I. *Of the Skin.*

§ 1. *Of the Scarf-ſkin.*

The epidermis, cuticula, or ſcarf-ſkin, is a fine, tranſparent, and inſenſible pellicle, deſtitute of nerves and blood veſſels, which inveſts the body, and everywhere covers the true ſkin. This ſcarf-ſkin, which ſeems to be very ſimple, appears, when examined with a microſcope, to be compoſed of ſeveral laminæ or ſcales which are increaſed by preſſure, as we may obſerve in the hands and feet, where it is frequently much thickened, and becomes perfectly callous. It ſeems to adhere to the cutis by a number of very minute filaments, but may eaſily be ſeparated from it by heat, or by maceration in water. Some anatomical writers have ſuppoſed that it

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Of the Integuments, &c.

is formed by a moiſture exhaled from the whole ſurface of the body, which gradually hardens when it comes into contact with the air. They were perhaps induced to adopt this opinion, by obſerving the ſpeedy regeneration of this part of the body when it has been by any means deſtroyed, it appearing to be renewed on all parts of the ſurface at the ſame time; whereas other parts which have been injured, are found to direct their growth from their circumference only towards their centre. But a demonſtrative proof that the epidermis is not a fluid hardened by means of the external air, is, that the fœtus in utero is found to have this covering. Leeuwenhoek ſuppoſed its formation to be owing to the expanſion of the extremities of the excretory veſſels, which are found everywhere upon the ſurface of the true ſkin. Ruyſch attributed its origin to the nervous papillæ of the ſkin; and Heiſter thinks it probable, that it may be owing both to the papillæ and the excretory veſſels. The celebrated Morgagni, on the other hand, contends *, that it is nothing more than the ſurface of the cutis, hardened and rendered inſenſible by the liquor amnii in utero and by the preſſure of the air. This is a ſubject, however, on which we can advance nothing with certainty.

* *Adverſar. Anat.* 11. *Animadver.* 2.

The cuticle is pierced with an infinite number of pores, or little holes, which afford a paſſage to the hairs, ſweat, and inſenſible perſpiration, and likewiſe to warm water, mercury, and whatever elſe is capable of being taken in by the abſorbents of the ſkin. The lines which we obſerve on the epidermis belong to the true ſkin. The cuticle adjuſts itſelf to them, but does not form them.

§ 2. *Of the Rete Mucoſum.*

75 Rete mucoſum.

Between the epidermis and cutis we meet with an appearance to which Malpighi, who firſt deſcribed it, gave the name of *rete mucoſum*, ſuppoſing it to be of a membranous ſtructure, and pierced with an infinite number of pores; but the fact is, that it ſeems to be nothing more than a mucous ſubſtance which may be diſſolved by macerating it in water, while the cuticle and cutis preſerve their texture.

The colour of the body is found to depend on the colour of this rete mucoſum; for in negroes it is obſerved to be perfectly black, whilſt the true ſkin is of the ordinary colour.

The bliſters which raiſe the ſkin when burnt or ſcalded, have been ſuppoſed by ſome to be owing to a rarefaction of this mucus; but they are more probably occaſioned by an increaſed action of the veſſels of the part, together with an afflux and effuſion of the thinner parts of the blood.

§ 3. *Of the* Cutis, *or True Skin.*

76 Cutis.

The cutis is compoſed of fibres cloſely compacted together, as we may obſerve in leather which is the prepared ſkin of animals. Theſe fibres form a thick network, which everywhere admits the filaments of nerves, and an infinite number of blood-veſſels and lymphatics.

The cutis, when the epidermis is taken off, is found to have, throughout its whole ſurface, innumerable papillæ, which appear like very minute granulations, and ſeem to be calculated to receive the impreſſions of the touch, being the moſt eaſily obſerved where the ſenſe of feeling is the moſt delicate, as in the palms of the hands and on the fingers.

Of the Integuments, &c.

Theſe papillæ are ſuppoſed by many anatomical writers to be continuations of the pulpy ſubſtance of nerves, whoſe coats have terminated in the cellular texture of the ſkin. The great ſenſibility of theſe papillæ evidently proves them to be exceedingly nervous; but ſurely the nervous fibrillæ of the ſkin are of themſelves ſcarcely equal to the formation of the papillæ, and it ſeems to be more probable that they are formed like the reſt of the cutis.

Theſe papillæ being deſcribed, the uſes of the epidermis and the reticulum mucoſum will be more eaſily underſtood; the latter ſerving to keep them conſtantly moiſt; while the former protects them from the external air, and modifies their too great ſenſibility.

§ 4. *Of the* Glands *of the Skin.*

77 The ſebaceous glands.

In different parts of the body we meet, within the ſubſtance of the ſkin, with certain glands or follicles, which diſcharge a fat and oily humour that ſerves to lubricate and ſoften the ſkin. When the fluid they ſecrete has acquired a certain degree of thickneſs, it approaches to the colour and conſiſtence of ſuet; and from this appearance they have derived their name of *ſebaceous glands*. They are found in the greateſt number in the noſe, ear, nipple, axilla, groin, ſcrotum, vagina, and prepuce.

Beſides theſe ſebaceous glands, we read, in anatomical books, of others that are deſcribed as ſmall ſpherical bodies placed in all parts of the ſkin, in much greater abundance than thoſe juſt now mentioned, and named *miliary*, from their ſuppoſed reſemblance to millet-ſeed. Steno, who firſt deſcribed theſe glands, and Malpighi, Ruyſch, Verheyen, Winſlow, and others, who have adopted his opinions on this ſubject, ſpeak of them as having excretory ducts, that open on the ſurface of the cuticle, and diſtil the ſweat and matter of inſenſible perſpiration: and yet, notwithſtanding the poſitive manner in which theſe pretended glands have been ſpoken of, we are now ſufficiently convinced that their exiſtence is altogether imaginary.

§ 5. *Of the* Insensible *Perſpiration and* Sweat.

78 Inſenſible perſpiration.

The matter of inſenſible perſpiration, or in other words, the ſubtile vapour that is continually exhaling from the ſurface of the body, is not ſecreted by any particular glands, but ſeems to be derived wholly from the extremities of the minute arteries that are everywhere diſperſed through the ſkin. Theſe exhaling veſſels are eaſily demonſtrated in the dead ſubject, by throwing water into the arteries; for then ſmall drops exude from all parts of the ſkin, and raiſe up the cuticle, the pores of which are cloſed by death; and in the living ſubject, a looking-glaſs placed againſt the ſkin, is ſoon obſcured by the vapour. Bidloo fancied he had diſcovered ducts leading from the cutis to the cuticle, and tranſmitting this fluid; but in this he was miſtaken.

When the perſpiration is by any means increaſed, and ſeveral drops that were inſenſible when ſeparate, are united together and condenſed by the external air, they form upon the ſkin ſmall but viſible drops called

ſweat

Of the Integuments, &c.

ſweat (N). This particularly happens after much exerciſe, or whatever occaſions an increaſed determination of fluids to the ſurface of the body; a greater quantity of perſpirable matter being in ſuch caſes carried through the paſſages that are deſtined to convey it off.

79 Whether theſe are one and the ſame or different excretions.

It has been diſputed, indeed, whether the inſenſible perſpiration and ſweat are to be conſidered as one and the ſame excretion, differing only in degree; or whether they are two diſtinct excretions derived from different ſources. In ſupport of the latter opinion, it has been alleged, that the inſenſible perſpiration is agreeable to nature, and eſſential to health, whereas ſweat may be conſidered as a ſpecies of diſeaſe. But this argument proves nothing; and it ſeems probable, that both the inſenſible vapour and the ſweat are exhaled in a ſimilar manner, though they differ in quantity, and probably in their qualities; the former being more limpid, and ſeemingly leſs impregnated with ſalts than the latter; at any rate we may conſider the ſkin as an emunctory through which the redundant water, and ſometimes the other more ſaline parts of the blood, are carried off. But the inſenſible perſpiration is not confined to the ſkin only—a great part of what we are conſtantly throwing off in this way is from the lungs. The quantity of fluid exhaled from the human body by this inſenſible perſpiration is very conſiderable. Sanctorius (O) an Italian phyſician, who indefatigably paſſed a great many years in a ſeries of ſtatical experiments, demonſtrated long ago what has been confirmed by later obſervations, that the quantity of vapour exhaled from the ſkin and from the ſurface of the lungs, amounts nearly to 5-8ths of the aliment we take in. So that if in the warm climate of Italy a perſon eats and drinks the quantity of eight pounds in the courſe of a day, five pounds of it will paſs off by inſenſible perſpiration, while three pounds only will be evacuated by ſtool, urine, ſaliva, &c. But in countries where the degree of cold is greater than in Italy, the quantity of perſpired matter is leſs: in ſome of the more northern climates, it being found not to equal the diſcharge by urine. It is likewiſe obſerved to vary according to the ſeaſon of the year, and according to the conſtitution, age, ſex, diſeaſes, diet, exerciſe, paſſions, &c. of different people.

80 Their uſes.

From what has been ſaid on the ſubject, it will be eaſily conceived, that this evacuation cannot be either much increaſed or diminiſhed in quantity without affecting the health.

Of the Integuments, &c.

The perſpirable matter and the ſweat are in ſome meaſure analogous to the urine, as appears from their taſte and ſaline nature (P). And it is worthy of obſervation, that when either of theſe ſecretions is increaſed in quantity, the other is diminiſhed; ſo that they who perſpire the leaſt, uſually paſs the greateſt quantity of urine, and *vice verſa*.

§ 6. *Of the* Nails.

81 The nails.

The nails are of a compact texture, hard and tranſparent like horn. Their origin is ſtill a ſubject of diſpute. Malpighi ſuppoſed them to be formed by a continuation of the papillæ of the ſkin: Ludwig, on the other hand, maintained, that they were compoſed of the extremities of blood-veſſels and nerves. Both theſe opinions are now deſervedly rejected.

They ſeem to poſſeſs many properties in common with the cuticle; like it they are neither vaſcular nor ſenſible, and when the cuticle is ſeparated from the true ſkin by maceration or other means, the nails come away with it.

They appear to be compoſed of different layers, of unequal ſize, applied one over the other. Each layer ſeems to be formed of longitudinal fibres.

In each nail we may diſtinguiſh three parts, viz. the root, the body or middle, and the extremity. The root is a ſoft, thin, and white ſubſtance, terminating in the form of a creſcent; the epidermis adheres very ſtrongly to this part; the body of the nail is broader, redder, and thicker, and the extremity is of ſtill greater firmneſs.

The nails increaſe from their roots, and not from their upper extremity.

Their principal uſe is to cover and defend the ends of the fingers and toes from extenal injury.

§ 7. *Of the* Hair.

82 The hair.

The hairs, which from their being generally known do not ſeem to require any definition, ariſe from diſtinct capſules or bulbs ſeated in the cellular membrane under the ſkin (Q). Some of theſe bulbs encloſe ſe-

(N) Leeuwenhoek aſſerts, that one drop of ſweat is formed by the conflux of 15 drops of perſpirable vapour.

(O) The inſenſible perſpiration is ſometimes diſtinguiſhed by the name of this phyſician, who was born in the territories of Venice, and was afterwards a profeſſor in the univerſity of Padua. After eſtimating the aliment he took in, and the ſenſible ſecretions and diſcharges, he was enabled to aſcertain with great accuracy the weight or quantity of inſenſible perſpiration by means of a ſtatical chair which he contrived for this purpoſe; and from his experiments, which were conducted with great induſtry and patience, he was led to determine what kinds of ſolid or liquid aliment increaſed or diminiſhed it. From theſe experiments he formed a ſyſtem, which he publiſhed at Venice in 1614, in the form of aphoriſms, under the title of *Ars de Medicina Statica*.

(P) Minute cryſtals have been obſerved to ſhoot upon the clothes of men who work in glaſs-houſes. *Haller. Elem. Phyſ.*

(Q) Malpighi, and after him the celebrated Ruyſch, ſuppoſed the hairs to be continuations of nerves, being of opinion that they originated from the papillæ of the ſkin, which they conſidered as nervous; and as a corroborating proof of what they advanced, they argued the pain we feel in plucking them out: but later anatomiſts ſeem to have rejected this doctrine, and conſider the hairs as particular bodies, not ariſing from the papillæ (for in the parts where the papillæ abound moſt there are no hairs), but from bulbs or capſules, which are peculiar to them.

Of the Integuments, &c.

veral hairs. They may be obſerved at the roots of the hairs which form the beard or whiſkers of a cat.

The hairs, like the nails, grow only from below by a regular propulſion from their root, where they receive their nouriſhment. Their bulbs, when viewed with a microſcope are found to be of various ſhapes. In the head and ſcrotum they are roundiſh; in the eyebrows they are oval; in the other parts of the body they are nearly of a cylindrical ſhape. Each bulb ſeems to conſiſt of two membranes, between which there is a certain quantity of moiſture. Within the bulb the hair ſeparates into three or four fibrillæ; the bodies of the hairs, which are the parts without the ſkin, vary in ſoftneſs and colour according to the difference of climate, age, or temperament of body (R).

Their general uſe in the body does not ſeem to be abſolutely determined; but hairs in particular parts, as on the eyebrows and eyelids, are deſtined for particular uſes, which will be mentioned when thoſe parts are deſcribed.

§ 8. *Of the* Cellular Membrane *and* Fat.

83 Cellular membrane.

The cellular membrane is found to inveſt the moſt minute fibres we are able to trace; ſo that, by modern phyſiologiſts, it is very properly conſidered as the univerſal connecting medium of every part of the body.

It is compoſed of an infinite number of minute cells united together, and communicating with each other. The two diſeaſes peculiar to this membrane are proofs of ſuch a communication; for in the *emphyſema* all its cells are filled with air, and in the anaſarca they are univerſally diſtended with water. Beſides theſe proofs of communication from diſeaſe, a familiar inſtance of it may be obſerved amongſt butchers, who uſually puncture this membrane, and by inflating it with air add to the good appearance of their meat.

84 Fat.

The cells of this membrane ſerve as reſervoirs to the oily part of the blood or *Fat*, which ſeems to be depoſited in them, either by tranſudation through the coats of the arteries that ramify through theſe cells, or by particular veſſels, continued from the ends of arteries. Theſe cells are not of a glandular ſtructure, as Malpighi and others after him have ſuppoſed. The fat is abſorbed and carried back into the ſyſtem by the lymphatics. The great waſte of it in many diſeaſes, particularly in the conſumption, is a ſufficient proof that ſuch an abſorption takes place.

The fulneſs and ſize of the body are in a great meaſure proportioned to the quantity of fat contained in the cells of this membrane.

In the living body it ſeems to be a fluid oil, which congretes after death. In graminivorous animals, it is found to be of a firmer conſiſtence than in man.

The fat is not confined to the ſkin alone, being met with everywhere in the interſtices of muſcles, in the omentum, about the kidneys, at the baſis of the heart, in the orbits, &c.

The chief uſes of the fat ſeem to be to afford moiſture to all the parts with which it is connected; to facilitate the action of the muſcles; and to add to the beauty of the body, by making it everywhere ſmooth and equal.

Of the Muſcles.

Sect. II. *Of the Muſcles.*

85

The muſcles are the organs of motion. The parts that are uſually included under this name conſiſt of diſtinct portions of fleſh, ſuſceptible of contraction and relaxation; the motions of which, in a natural and healthy ſtate, are ſubject to the will, and for this reaſon they are called *voluntary* muſcles. But beſides theſe, there are other parts of the body that owe their power of contraction to their muſcular fibres; thus the heart is of a muſcular texture, forming what is called a hollow muſcle; and the urinary bladder, ſtomach, inteſtines, &c. are enabled to act upon their contents, merely becauſe they are provided with muſcular fibres. Theſe are called *involuntary* muſcles, becauſe their motions are not dependent on the will. The muſcles of reſpiration being in ſome meaſure influenced by the will, are ſaid to have a *mixed* motion.

The names by which the voluntary muſcles are diſtinguiſhed, are founded on their ſize, figure, ſituation, uſe, or the arrangement of their fibres, or their origin and inſertion. But beſides theſe particular diſtinctions, there are certain general ones that require to be noticed. Thus, if the fibres of a muſcle are placed parallel to each other in a ſtraight direction, they form what is ſtyled a *rectilinear* muſcle; if the fibres croſs and interſect each other, they conſtitute a *compound* muſcle; a *radiated* one, if the fibres are diſpoſed in the manner of rays; or a *penniform* muſcle, if, like the plume of a pen, they are placed obliquely with reſpect to the tendon.

Muſcles that act in oppoſition to each other, are called *antagoniſtæ*; thus every extenſor muſcle has a flexor for its antagoniſt, and *vice verſa*. Muſcles that concur in the ſame action are ſtyled *congeneres*.

The muſcles being attached to the bones, the latter may be conſidered as levers that are moved in different directions by the contraction of thoſe organs.

That end of a muſcle which adheres to the moſt fixed part is uſually called the *origin*, and that which adheres to the more moveable part, the *inſertion* of the muſcle.

In every muſcle we may diſtinguiſh two kinds of fibres; the one ſoft, of a red colour, ſenſible, and irritable, called fleſhy fibres; the other of a firmer texture, of a white gliſtening colour, inſenſible, without irritability or the power of contracting, and named tendinous fibres. They are occaſionally intermixed, but the fleſhy fibres generally prevail in the belly or middle part of a muſcle, and the tendinous ones in the extremities. If theſe tendinous fibres are formed into a round

(R) The hairs likewiſe differ from each other, and may not be improperly divided into two claſſes; one of which may include the hair of the head, chin, pubes, and axillæ; and the other, the ſofter hairs, which are to be obſerved almoſt everywhere on the ſurface of the body.

Of the Muſcles.

round ſlender cord, they form what is called the *tendon* of the muſcle; on the other hand, if they are ſpread into a broad flat ſurface, the extremity of the muſcle is ſtyled *aponeuroſis*.

The tendons of many muſcles, eſpecially when they are long and expoſed to preſſure or friction in the grooves formed for them in the bones, are ſurrounded by a tendinous theath or *faſcia*, in which we ſometimes find a ſmall mucous ſac or *burſa mucoſa*, which obviates any inconvenience from friction. Sometimes we find whole muſcles, and even ſeveral muſcles, covered by a faſcia of the ſame kind, that affords origin to many of their fibres, dipping down between them, adhering to the ridges of bones, and thus preventing them from ſwelling too much when in action. The moſt remarkable inſtance of ſuch a covering is the *faſcia lata* of the thigh.

Each muſcle is encloſed by a thin covering of cellular membrane, which has been ſometimes improperly conſidered as peculiar to the muſcles, and deſcribed under the name of *propria membrana muſculoſa*. This cellular covering dips down into the ſubſtance of the muſcle, connecting and ſurrounding the moſt minute fibres we are able to demonſtrate, and affording a ſupport to their veſſels and nerves.

Leeuwenhoek fancied he had diſcovered, by means of his microſcope, the ultimate diviſion of a muſcle, and that he could point out the ſimple fibre, which appeared to him to be a hundred times leſs than a hair; but he was afterwards convinced how much he was miſtaken on this ſubject, and candidly acknowledged, that what he had taken for a ſimple fibre was in fact a bundle of fibres.

It is eaſy to obſerve ſeveral of theſe faſcicula or bundles in a piece of beef, in which, from the coarſeneſs of its texture, they are very evident.

The red colour which ſo particularly diſtinguiſhes the muſcular or fleſhy parts of animals, is owing to an infinite number of blood-veſſels, that are diſperſed through their ſubſtance. When we macerate the fibres of a muſcle in water, it becomes of a white colour like all other parts of the body diveſted of their blood. The blood-veſſels are accompanied by nerves, and they are both diſtributed in ſuch abundance to theſe parts, that in endeavouring to trace the courſe of the blood-veſſels in a muſcle, it would appear to be formed altogether by their ramifications; and in an attempt to follow the branches of its nerves, they would be found to be equal in proportion.

If a muſcle is pricked or irritated, it immediately contracts. This is called its irritable principle; and this irritability is to be conſidered as the characteriſtic of muſcular fibres; and may ſerve to prove their exiſtence in parts that are too minute to be examined by the eye. This power, which diſpoſes the muſcles to contract when ſtimulated, independent of the will, is ſuppoſed to be inherent in them; and is therefore named *vis inſita*. This property is not to be confounded with elaſticity, which the membranes and other parts of the body poſſeſs in a greater or leſs degree in common with the muſcles; nor with ſenſibility, for the heart, though the moſt irritable, ſeems to be the leaſt ſenſible of any of the muſcular parts of the body.

86
Of the vis inſita.

After a muſcular fibre has contracted, it [illegible] to a ſtate of relaxation, till it is [illegible] then it contracts and relaxes again. We can [illegible] produce ſuch a contraction, by irritating the [illegible] leading to a muſcle, although the muſcle itſelf is not affected.

This principle is found to be greater in [illegible] in large, and in young than in old, animals.

In the voluntary muſcles the effect of [illegible] and relaxation of the noble fabric we produce in obedience to the will, by what may be called the *vis nervea*, a property that is not to be confounded with the *vis inſita*. As the exiſtence of a *vis inſita* diſtinct from a *vis nervea*, was the doctrine taught by Dr Haller in his *Elem. Phyſ.* but is at preſent called in queſtion by ſeveral, particularly Dr Monro, we think it neceſſary to give a few objections, as ſtated in his Obſervations on the Nervous Syſtem.

"The chief experiment (ſays the Doctor) which ſeems to have led Dr Haller to this opinion, is the well known one, that the heart and other muſcles, after being detached from the brain, continue to act ſpontaneouſly, or by ſtimuli may be rouſed into action for a conſiderable length of time; and when it cannot be alleged, ſays Dr Haller, that the nervous fluid is by the mind, or otherwiſe, impelled into the muſcle. The vis

"That in this inſtance, we cannot comprehend by what power the nervous fluid or energy can be put in motion, muſt perhaps be granted: But has Dr Haller given a better explanation of the manner in which his ſuppoſed vis inſita becomes active?

"If it be as difficult to point out the cauſe of the action of the vis inſita as that of the action of the vis nervea, the admiſſion of that new power, inſtead of relieving, would add to our perplexity.

"We ſhould then have admitted, that two cauſes of a different nature were capable of producing exactly the ſame effect; which is not in general agreeable to the laws of nature.

"We ſhould find other conſequences ariſe from ſuch a hypotheſis, which tend to weaken the credibility of it. For inſtance, if in a ſound animal the vis nervea alone produces the contraction of the muſcles, we will aſk what purpoſe the vis inſita ſerves? If both operate, are we to ſuppoſe that the vis nervea, impelled by the mind or living principle, gives the order, which the vis inſita executes, and that the nerves are the internuntii; and ſo admit two wiſe agents employed in every the moſt ſimple action? But inſtead of ſpeculating farther, let us learn the effect of experiments, and endeavour from theſe to draw plain concluſions.

"1. When I poured a ſolution of opium in water under the ſkin of the leg of a frog, the muſcles, to the ſurface of which it was applied, were very ſoon deprived of the power of contraction. In like manner, when I poured this ſolution into the cavity of the heart, by opening the vena cava, the heart was almoſt inſtantly deprived of its power of motion, whether the experiment was performed on it fixed in its place, or cut out of the body.

"2. I opened the thorax of a living frog; and then tied or cut its aorta, ſo as to put a ſtop to the circulation of its blood.

Of the Muſcles.

" I then opened the vena cava, and poured the ſolution of opium into the heart; and found, not only that this organ was inſtantly deprived of its powers of action, but that in a few minutes the moſt diſtant muſcles of the limbs were extremely weakened. Yet this weakneſs was not owing to the want of circulation, for the frog could jump about for more than an hour after the heart was cut out.

" In the firſt of theſe two experiments, we obſerve the ſuppoſed vis inſita deſtroyed by the opium; in the latter, the vis nervea: for it is evident that the limbs were affected by the ſympathy of the brain, and of the nervous ſyſtem in general, with the nerves of the heart.

" 3. When the nerve of any muſcle is firſt divided by a tranſverſe ſection, and then burnt with a hot iron, or punctured with a needle, the muſcle in which it terminates contracts violently, exactly in the ſame manner as when the irritation is applied to the fibres of the muſcle. But when the hot iron or needle is confined to the nerve, Dr Haller himſelf muſt have admitted, that the vis nervea, and not the vis inſita, was excited. But here I would aſk two queſtions.

" Firſt, Whether we do not as well underſtand how the vis nervea is excited when irritation is applied to the muſcle as when it is applied to the trunk of the nerve, the impelling power of the mind ſeeming to be equally wanting in both caſes?

" Secondly, If it appears that irritation applied to the trunk of a nerve excites the vis nervea, why ſhould we doubt that it can equally well excite it when applied to the ſmall and very ſenſible branches and terminations of the nerve in the muſcle?

" As, therefore, it appears that the ſuppoſed vis inſita is deſtroyed or excited by the ſame means as the vis nervea; nay, that when, by the application of opium to the heart of a frog, after the aorta is cut and the circulation interrupted, we have deſtroyed the vis inſita, the vis nervea is ſo much extinguiſhed, that the animal cannot act with the diſtant muſcles of the limb; and that theſe afterwards grow very torpid, or loſe much of their ſuppoſed vis inſita; it ſeems clearly to follow, that there is no juſt ground for ſuppoſing that any other principle produces the contraction of a muſcle."

The *vis nervoſa*, or operation of the mind, if we may ſo call it, by which a muſcle is brought into contraction, is not inherent in the muſcle like the *vis inſita*, neither is it perpetual, like this latter property. After long continued or violent exerciſe, for example, the voluntary muſcles become painful, and at length incapable of further action; whereas the heart and other involuntary muſcles, the motions of which depend ſolely on the *vis inſita*, continue through life in a conſtant ſtate of action, without any inconvenience or waſte of this inherent principle.

Of the Muſcles.

The action of the vis nervoſa on the voluntary muſcles conſtitutes what is called muſcular motion; a ſubject that has given riſe to a variety of hypotheſes, many of them ingenious, but none of them ſatisfactory.

Borelli and ſome others have undertaken to explain the cauſe of contraction, by ſuppoſing that every muſcular fibre forms as it were a chain of very minute bladders, while the nerves which are diſtributed through the muſcle, bring with them a ſupply of animal ſpirits, which at our will fill theſe bladders, and by increaſing their diameter in width, ſhorten them, and of courſe the whole fibre.

Borelli ſuppoſes the bladders to be of a rhomboidal ſhape; Bernouilli, on the other hand, contends that they are oval. Our countryman, Cowper, fancied he had filled them with mercury; the cauſe of this miſtake was probably owing to the mercury's inſinuating itſelf into ſome of the lymphatic veſſels. The late ingenious Mr Elliot undertook to account for the phenomena of muſcular motion on principles very different from thoſe juſt now mentioned. He ſuppoſed that a dephlogiſticated ſtate of the blood is requiſite for muſcular action, and that a communication of phlogiſton to the blood is a neceſſary effect of ſuch action.

We know that the muſcular fibre is ſhortened, and that the muſcle itſelf ſwells when in action; but how theſe phenomena are produced, we are unable to determine. We likewiſe know that the nerves are eſſential to muſcular motion; for upon dividing or making a ligature round the nerve leading to a muſcle, the latter becomes incapable of motion. A ligature made on the artery of a muſcle produces a ſimilar effect: a proof this, that a regular ſupply of blood is alſo equally neceſſary to muſcular motion. The cauſe of palſy is uſually not to be ſought for in the muſcle affected, but in the nerve leading to that muſcle, or that part of the brain or ſpinal marrow from which the nerve derives its origin.

Of the particular Muſcles.

As the enumeration and deſcription of the particular muſcles muſt be dry and unentertaining to the generality of readers, yet cannot be altogether omitted in a work of this nature, it appeared eligible to throw this part of the ſubject into the form of a table; in which the name, origin, inſertion, and principal uſe of each muſcle will be found deſcribed in few words, and occaſionally its etymology, when it is of Greek derivation or difficult to be underſtood.

A TABLE

A TABLE of the MUSCLES, arranged according to their SITUATION.

[*N B.* This Table does not include all the muſcles of the body; thoſe belonging to the eyes, internal ear, intestines, testes, the male and female organs of generation, being described in other parts of the work. The reader will be pleased to observe, that although all the muſcles (a few only excepted) are in pairs, mention is here made only of the muſcles of one side.]

Muscles	*Name.*	*Origin.*	*Inſertion.*	*Uſe.*
Muscles ſituated under the integuments of the cranium, - -	1. Occipito-frontalis.	From the tranſverſe ridge of the os occipitis.	Into the ſkin of the eyebrows.	To pull the ſkin of the head backwards, and to raiſe the eyebrows and ſkin of the forehead.
	2. Corrugator ſupercilii.	From above the joining of the os frontis, os naſi, and os maxillare.	Into the inner part of the occipito-frontalis.	To draw the eyebrows towards each other, and to wrinkle the forehead.
——— of the eyelids, - -	1. Orbicularis palpebrarum.	From around the edge of the orbit.	Into the naſal proceſs of the os maxillare.	To ſhut the eye.
	2. Levator palpebræ ſuperioris.	From the bottom of the orbit, near the optic foramen.	Into the cartilage of the upper eyelid.	To open the eye.
——— of the external ear, -	1. Attollens auriculam.	From the tendon of the occipito-frontalis near the os temporis.	Into the upper part of the ear.	To raiſe the ear.
	2. Anterior auriculæ.	From near the back part of the zygoma.	Into an eminence behind the helix.	To raiſe this eminence, and to pull it forwards.
	3. Retrahentes (s) auriculæ.	From the outer and back part of the root of the maſtoid proceſs.	Into the convex part of the concha.	To ſtretch the concha, and pull the ear backwards.
——— of the cartilages of the ear, - -	1. Tragicus.	From the outer and middle part of the concha, near the tragus.	Into the upper part of the tragus.	To depreſs the concha, and pull the point of the tragus a little outwards.
	2. Anti-tragicus.	From the root of the inner part of the helix.	Into the upper part of the anti-tragus.	To dilate the mouth of the concha.
	3. Tranſverſus auriculæ.	From the upper part of the concha.	Into the inner part of the helix.	To ſtretch the concha and ſcapha, and likewiſe to pull the parts it is connected with towards each other.
	4. Helicis major.	From the upper, anterior, and acute part of the helix.	Into the cartilage of the helix, a little above the tragus.	To depreſs the upper part of the helix.
	5. Helicis minor.	From the lower and fore part of the helix.	Into the helix, near the fiſſure in its cartilage.	To contract the fiſſure.

Muscles

(s) Theſe are three ſmall ſlender muſcles. The inferior one is ſometimes wanting.

Of the Muſcles.

	Name.	*Origin.*	*Inſertion.*	*Uſe.*
Muſcles of the noſe,	1. Compreſſor naris.	(t) From the outer part of the root of the alæ naſi.	Into the naſal proceſs of the os maxillare, and anterior extremity of the os naſi.	To ſtraighten the noſtrils, and likewiſe to corrugate the ſkin of the noſe.
—— of the mouth and lips,	1. Levator labii ſuperioris, alæque naſi.	From the outer part of the orbitar proceſs of the os maxillare, and from the naſal proceſs of that bone, where it joins the os frontis.	Into the upper lip and alæ of the noſe.	To draw the upper lip and ſkin of the noſe upwards and outwards.
	2. Levator anguli oris.	From the os maxillare ſuperius, between the orbitar foramen and the firſt dens molaris.	Into the orbicularis oris at the angle of the mouth.	To raiſe the corner of the mouth.
	3. Zygomaticus major.	From the os malæ, near the zygomatic ſuture.	Into the angle of the mouth.	To raiſe the angle of the mouth, and make the cheek prominent as in laughing.
	4. Zygomaticus minor.	Immediately above the origin of the zyg. major.	Into the angle of the mouth.	To raiſe the angle of the mouth obliquely outwards.
	5. Buccinator.	From the alveoli of the dentes molares in the upper and lower jaws.	Into the angle of the mouth.	To contract the mouth and draw the angle of it outwards and backwards.
	6. Depreſſor labii ſuperioris, alæque naſi.	From the os maxill. ſuper. immediately above the gums of the dentes inciſores.	Into the root of the alæ naſi and upper lip.	To draw the alæ naſi and upper lip downwards.
	7. Depreſſor anguli oris.	At the ſide of the chin from the lower edge of the maxilla inferior.	Into the angle of the mouth.	To draw the corner of the mouth downwards.
	8. Depreſſor labii inferioris.	From the lower and anterior part of the maxilla inferior.	Into the under lip.	To draw the under lid downwards and ſomewhat outwards.
	9. Levator labii inferioris.	From near the gums of the inciſores and caninus of the maxilla inferior.	Into the under lip and ſkin of the chin.	To raiſe the under lip and ſkin of the chin.
	10. Orbicularis oris (u).			To ſhut the mouth by conſtringing the lips.
—— of the lower jaw,	1. Temporalis.	From part of the os bregmatis and os frontis; ſquamous part of the os temporis; back part of the os malæ, and the temporal proceſs of the os ſphenoides (v).	Into the coronoid proceſs of the lower jaw.	To move the lower jaw upwards.
	2. Maſſeter			

(t) The noſe is affected by fibres of the occipito-frontalis, and by ſeveral muſcles of the face; but this pair, the compreſſores, is the only one that is proper to it.

(u) This muſcle is in a great meaſure, if not wholly, formed by the buccinator, zygomatici, depreſſores, and other muſcles that move the lips. Its fibres ſurround the mouth like a ring.

(v) Some of its fibres likewiſe have their origin from a ſtrong faſcia that covers the muſcle and adheres to the

Of the Muſcles.

	Name.	Origin.	Inſertion.	Uſe.
	2. Maſſeter (w).	From the malar proceſs of the os maxillare, and the lower edges of the os malæ, and of the zygomatis proceſs of the os temporis.	Into the baſis of the coronoid proceſs, and that part of the jaw which ſupports that and the condyloid proceſs.	To raiſe and likewiſe to move the jaw a little forwards and backwards.
	3. Pterygoideus internus.	From the inner ſurface of the outer wing of the pterygoid proceſs of the os ſphenoides, and from the proceſs of the os palati that helps to form the pterygoid foſſa.	Into the lower jaw on its inner ſide and near its angle.	To raiſe the lower jaw, and draw it a little to one ſide.
	4. Pterygoideus externus.	From the external ala of the pterygoid proceſs, a ſmall part of the adjacent os maxillare, and a ridge in the temporal proceſs of the os ſphenoides.	Into the fore part of the condyloid proceſs of the lower jaw, and likewiſe of the capſular ligament.	To move the jaw forwards and to the oppoſite ſide (x); and at the ſame time to prevent the ligament of the joint from being pinched.
Muscles ſituated at the fore part of the neck, - -	1. Latiſſimus colli (y).	From the cellular membrane covering the pectoral, deltoid, and trapezius muſcles.	Into the ſide of the chin and integuments of the cheek.	To draw the cheeks and ſkin of the face downwards; and when the mouth is ſhut, to draw all that part of the ſkin to which it is connected below the lower jaw upwards.
	2. Maſtoideus (z).	From the upper part of the ſternum, and from the upper and fore part of the clavicle.	Into the maſtoid proceſs, and as far back as the lambdoidal ſuture.	To move the head to one ſide, or when both muſcles act, to bend it forwards.
——— ſituated between the trunk and the os hyoides,	1. Omo-hyoideus (a).	From the upper coſta of the ſcapula near its niche; from part of a ligament that extends acroſs this niche, and ſometimes by a few fibres, from the coracoid proceſs.	Into the baſis of the os hyoides.	To draw the os hyoides in an oblique direction downwards.

2. Sterno-

bone round the whole circumference of its origin. When we remove this covering, we find the muſcle of a ſemicircular ſhape with its radiated fibres, converging and forming a ſtrong middle tendon.

(w) So called from its uſe in chewing, its derivation being from μασσαομαι, *manduco*, "to eat."

(x) This happens when the muſcle acts ſingly. When both act, the jaw is brought horizontally forwards.

(y) This broad and thin muſcular expanſion, which is ſituated immediately under the common integuments, is by Winſlow named *muſculus cutaneus*. Galen gave it the name of πλατυσμα μυοιδες, (*Platysma myoides*); the etymology of which is from πλαδυσμος, *dilatatio*, and μυς, *muſculus*, and ειδος, *forma*.

(z) This, on account of its two origins, is by Albinus deſcribed as two diſtinct muſcles, which he names *ſterno-maſtoideus* and *cleido-maſtoideus*.

(a) As this muſcle does not always ariſe from the coracoid proceſs, it ſeems to have been improperly named

coraco-

	Name.	*Origin.*	*Inſertion.*	*Uſe.*
	2. Sterno-hyoideus.	From the cartilage of the firſt rib, the inner and upper part of the ſternum, and a ſmall part of the clavicle.	Into the baſis of the os hyoides.	To draw the os hyoides downwards.
	3. Hyo-thyroideus.	From part of the baſis and horn of the os hyoides.	Into a rough oblique line at the ſide of the thyroid cartilage.	To raiſe the thyroid cartilage, or depreſs the os hyoides.
	4. Sterno-thyroideus.	From between the cartilages of the 1ſt and 2d ribs, at the upper and inner part of the ſternum.	Immediately under the hyo-thyroideus.	To pull the thyroid cartilage downwards.
	5. Crico-thyroideus.	From the anterior part and ſide of the cricoid cartilage.	Into the lower part and inferior horn of the thyroid cartilage.	To pull the cricoid cartilage upwards and backwards, or the thyroid forwards and downwards.
Muſcles ſituated between the os hyoides and lower jaw, -	1. Digaſtricus (B).	From a foſſa at the root of the maſtoid proceſs, and likewiſe from the os hyoides.	Into the lower and anterior part of the chin.	To draw the lower jaw downwards.
	2. Stylo-hyoideus (C).	From the baſis of the ſtyloid proceſs.	Into the ſide and fore part of the os hyoides near its baſe.	To draw the os hyoides obliquely upwards.
	3. Mylo-hyoideus (D).	From the inſide of the lower jaw, between the laſt dens molaris and the chin.	Into the baſis of the os hyoides.	To move the os hyoides to either ſide, forwards or upwards.
	4. (E) Genio-hyoideus.	From the inſide of the chin.	Into the baſe of the os hyoides.	To move the os hyoides forwards or upwards.
	5. Genio-gloſſus.	From the inſide of the chin.	Into the tongue and baſis of the os hyoides.	To move the tongue in various directions.
	6. Hyo-gloſſus (F).	From the horn, baſis, and appendix of the os hyoides.	Into the tongue laterally.	To draw the tongue downwards and inwards.
	7. Lingualis.	Laterally from the root of the tongue.	Into the extremity of tongue.	To ſhorten the tongue and draw it backwards.
				8. Stylo-gloſſus.

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coraco-hyoides by Douglas and Albinus. Winſlow calls it *omo-hyoides*, on account of its general origin from the ſcapula.

(B) From δὶς and γαστὴρ (*biventer*), becauſe it has two fleſhy bellies with a middle tendon. This tendon paſſes through the ſtylo-hyoideus.

(C) In ſome ſubjects we meet with another muſcle, which, from its having nearly the ſame origin, inſertion, and uſe as this, has been named *ſtylo-hyoideus alter*.

(D) So named from its ariſing near the dentes molares (μυλοὶ) and its being inſerted into the os hyoides.

(E) From γενεῖον, *mentum*, "the chin."

(F) From κέρας, *cornu*, and γλῶσσα, *lingua*, "the tongue."

Of the Muſcles.

	Name.	*Origin.*	*Inſertion.*	*Uſe.*
	8. Stylo-gloſſus.	From the ſtyloid proceſs, and ſometimes alſo from a ligament that extends from thence to the angle of the lower jaw.	Into the ſide of the tongue from the root to near its tip.	To move the tongue backwards and to one ſide.
	9. Stylo-pharyngæus.	From the baſis of the ſtyloid proceſs.	Into the ſide of the pharynx and poſterior part of the thyroid cartilage.	To raiſe the thyroid cartilage and pharynx, and likewiſe to dilate the latter.
	10. Circumflexus palati.	From near the bony part of the Euſtachian tube, and from the ſpinous proceſs of the os ſphenoides.	Into the ſemilunar edge of the os palati and the velum pendulum palati (G).	To dilate and draw the velum obliquely downwards.
	11 Levator palati.	From the membranous part of the Euſtachian tube, and the extremity of the os petroſum.	Into the velum pendulum palati.	To pull the velum backwards.
Muscles ſituated about the fauces,	1. Palato-pharyngæus.	From the lower and anterior part of the cartilaginous extremity of the Euſtachian tube (H); the tendinous expanſion of the circumflexus palati; and the velum pendulum palati near the baſis and back part of the uvula.	Into the upper and poſterior part of the thyroid cartilage.	To raiſe the pharynx and thyroid cartilage, or to pull the velum and uvula backwards and downwards.
	2. Conſtrictor iſthmi faucium.	From near the baſis of the tongue laterally.	Into the velum pendulum palati, near the baſis and fore part of the uvula.	To raiſe the tongue and draw the velum towards it (I).
	3. Azygos uvulæ.	From the end of the ſuture that unites the oſſa palati.	Into the extremity of the uvula.	To ſhorten the uvula, and bring it forwards and upwards.
——— at the back part of the pharynx.	1. Conſtrictor pharyngis ſuperior.	From the cuneiform proceſs of the occipital bone; the pterygoid proceſs of the os ſphenoides; and from each jaw near the laſt dens molaris (K).	Into the middle of the pharynx.	To move the pharynx upwards and forwards, and to compreſs its upper part.

(G) This muſcle in its courſe forms a round tendon, which, after paſſing over a kind of hook formed by the inner plate of the pterygoid proceſs of the ſphenoid bone, expands into a tendinous membrane.

(H) The few fibres that ariſe from the Euſtachian tube are deſcribed as a diſtinct muſcle by Albinus, under the name of *ſalpingo-pharyngæus*. They ſerve to dilate the mouth of the tube.

(I) This muſcle, and the palato-pharyngæus, likewiſe ſerve to cloſe the paſſage into the fauces, and to carry the food into the pharynx.

(K) The three orders of fibres here mentioned, with a few others derived from the tongue, have given occaſion to Douglas to deſcribe them as four diſtinct muſcles, under the names of *cephalo-pharyngæus*, *mylo-pharyngæus*, *ptery-pharyngæus*, and *gloſſo-pharyngæus*.

	Name.	*Origin.*	*Insertion.*	*Use.*
	2. Conſtrictor pharyngis medius (l).	From the horn and appendix of the os hyoides, and from the ligament that unites it with the thyroid cartilage.	Into the middle of the proceſſus cuneiformis of the occipital bone, about its middle, and before the great foramen.	To draw the os hyoides and pharynx upwards, and to compreſs the latter.
	3. Conſtrictor pharyngis inferior (m).	From the cricoid and thyroid cartilages.	Into the middle of the pharynx.	To compreſs part of the pharynx.
Muscles about the glottis, - -	1. Crico-arytænoideus lateralis.	From the ſide of the cricoid cartilage.	Into the baſis of the arytænoid cartilage laterally.	To open the glottis.
	2. Crico-arytænoideus poſticus.	From the cricoid cartilage poſteriorly.	Into the baſis of the arytænoid cartilage poſteriorly.	To open the glottis.
	3. Arytænoideus obliquus.	From the baſis of one of the arytænoid cartilages.	Near the extremity of the other arytænoid cartilage.	To draw the parts it is connected with towards each other.
	4. Arytænoideus tranſverſus.	From one of the arytænoid cartilages laterally.	Into the other arytænoid cartilage laterally.	To ſhut the glottis.
	5. Thyreo-arytænoideus.	From the poſterior and under part of the thyroid cartilage.	Into the arytænoid cartilage.	To draw the arytænoid cartilage forwards.
	6. Arytæno-epiglottideus.	From the upper part of the arytænoid cartilage laterally.	Into the ſide of the epiglottis.	To move the epiglottis outwards.
	7. Thyreo-epiglottideus.	From the thyroid cartilage.	Into the ſide of the epiglottis.	To pull the epiglottis obliquely downwards (n).
——— at the fore part of the neck cloſe to the vertebræ, - -	1. Rectus capitis internus major.	From the anterior extremities of the tranſverſe proceſſes of the five lowermoſt cervical vertebræ.	Into the fore part of the cuneiform proceſs of the os occipitis.	To bend the head forwards.
	2. Rectus capitis internus minor.	From the anterior and upper part of the firſt cervical vertebra.	Near the baſis of the condyloid proceſs of the os occipitis.	To aſſiſt the laſt deſcribed muſcle.
	3. Rectus capitis lateralis.	From the anterior and upper part of the tranſverſe proceſs of the firſt cervical vertebra.	Into the os occipitis, oppoſite to the ſtylo-maſtoid foramen.	To move the head to one ſide.
	4. Longus colli.	Within the thorax, laterally from the bodies of the three uppermoſt dorſal vertebra; from the baſis and fore part	Into the ſecond cervical vertebra anteriorly.	To pull the neck to one ſide (o).

(l) Douglas makes two muſcles of this, the *hyo-pharyngæus* and *ſyndeſmo-pharyngæus*.
(m) The crico-pharyngæus and thyro-pharyngæus of Douglas.
(n) When either this or the preceding muſcle acts with its fellow, the epiglottis is drawn directly downwards upon the glottis.
(o) When both muſcles act, the neck is drawn directly forwards.

	Name.	Origin.	Inſertion	Uſe.
		of the tranſverſe proceſſes of the firſt and ſecond dorſal vertebræ, and of the laſt cervical vertebra; and laſtly, from the anterior extremities of the tranſverſe proceſſes of the 6th, 5th, 4th, and 3d cervical vertebræ.		
Muscles at the fore part of the abdomen, - -	1. Obliquus externus.	From the lower edges of the eight inferior ribs near their cartilages.	Into the linea alba (P), oſſa pubis (Q), and ſpine of the ilium (R).	To compreſs and ſupport the viſcera, aſſiſt in evacuating the fæces and urine, draw down the ribs, and bend the trunk forwards or obliquely to one ſide.
	2. Obliquus internus.	From the ſpinous proceſs of the three lowermoſt lumbar vertebræ, the back part of the os ſacrum, the ſpine of the ilium, and back part of Fallopius's ligament (T).	Into the cartilages of all the falſe ribs, linea alba (S), and fore part of the pubis.	To aſſiſt the obliquus externus.
	3. Tranſverſalis.	From the cartilages of the ſeven inferior ribs; the tranſverſe proceſſes of the laſt dorſal, and four upper lumbar vertebræ; the inner part of Fallopius's ligament and the ſpine of the ilium.	Into the linea alba and cartilago enſiformis.	To compreſs the abdominal viſcera.

(P) The linea alba is that tendinous expanſion which reaches from the cartilago enſiformis to the os pubis. It is formed by the interlacement of the tendinous fibres of the oblique and tranſverſe muſcles, and on this account ſome anatomiſts have conſidered theſe as three digaſtric muſcles.

(Q) A little above the pubis the tendinous fibres of this muſcle ſeparate from each other, ſo as to form an opening called the *ring* of the obliquus externus, and commonly, though improperly, the ring of the abdominal muſcles, there being no ſuch aperture either in the tranſverſalis or obliquus internus. This ring in the male ſubject affords a paſſage to the ſpermatic veſſels, and in the female to the round ligament of the uterus.

(R) From the anterior and upper ſpinous proceſs of the ilium, this muſcle is ſtretched tendinous to the os pubis, and thus forms what is called by ſome *Fallopius's*, and by others *Poupart's ligament*. The blood-veſſels paſs under it to the thigh.

(S) The tendon formed by the upper part of this muſcle in its way to the linea alba is divided into two layers. The poſterior layer runs under, and the anterior one over, the rectus muſcle.

(T) From this part it detaches ſome fibres which extend downwards upon the ſpermatic chord, and form what is deſcribed as the cremaſter muſcle.

	Name.	*Origin.*	*Inſertion.*	*Uſe.*
	4. Rectus abdominis.	From the upper edge of the pubis and the ſymphyſis pubis.	Into the cartilages of the 5th, 6th, and 7th ribs, and the edge of the cartilago enſiformis (u).	To compreſs the fore part of the abdomen, and to bend the trunk forwards.
	5. Pyramidalis (v).	From the anterior and upper part of the pubis.	Into the linea alba and inner edge of the rectus, commonly about two inches above the pubis.	To aſſiſt the lower portion of the rectus.
Muscles at the fore part of the thorax,	1. Pectoralis major.	From the cartilaginous ends of the 5th and 6th ribs; the ſternum, and anterior part of the clavicle.	Into the upper and inner part of the os humeri (w).	To draw the arm forwards, or obliquely forwards.
	2. Subclavius.	From the cartilage of the firſt rib.	Into the under ſurface of the clavicle.	To move the clavicle forwards and downwards, and to aſſiſt in raiſing the firſt rib.
	3. Pectoralis minor (x).	From the upper edges of the 3d, 4th, and 5th ribs.	Into the coracoid proceſs of the ſcapula.	To move the ſcapula forwards and downwards, or to elevate the ribs.
	4. Serratus magnus.	From the eight ſuperior ribs.	Into the baſis of the ſcapula.	To bring the ſcapula forwards.
——— that concur in forming the thorax,	1. Diaphragma (y).			
	2. Levatores coſtarum.	From the tranſverſe proceſſes of the laſt cervical, and the eleven upper dorſal vertebræ.	Into the upper ſide of each rib, near its tuberoſity.	To move the ribs upwards and outwards.
	3. Intercoſtales externi.	From the lower edge of each upper rib.	Into the ſuperior edge of each lower rib.	To elevate the ribs.
	4. Intercoſtales interni (a).			
	5. Sterno-coſtales.			

(u) The fibres of the rectus are generally divided by three tendinous interſections. The two upper thirds of this muſcle paſſing between the tendinous layers of the obliquus internus, are encloſed as it were in a ſheath; but at its lower part we find it immediately contiguous to the peritonæum, the inferior portion of the tendon of the tranſverſalis paſſing over the rectus, and adhering to the interior layer of the obliquus internus.

(v) This muſcle is ſometimes wanting.

(w) The fibres of this muſcle paſs towards the axilla in a folding manner, and with thoſe of the latiſſimus dorſi form the arm-pit.

(x) This and ſome other muſcles derive their name of *ſerratus*, from their ariſing by a number of tendinous or fleſhy digitations, reſembling the teeth of a ſaw (*ſerra*).

(y) For a deſcription of the diaphragm, ſee Chap. IV. Sect. IV.

(a) The origin, inſertion, and uſe of the internal intercoſtals, are ſimilar to thoſe of the external. The reader, however, will be pleaſed to obſerve, that the intercoſtales externi occupy the ſpaces between the ribs only from the ſpine to their cartilages; from thence to the ſternum, there being only a thin membrane, which is ſpread over the intercoſtales interni; and that the latter, on the contrary, extend only from the ſternum to the angles of each rib.

The fibres of the external muſcles run obliquely forwards; thoſe of the internal obliquely backwards. This difference in the direction of their fibres induced Galen to ſuppoſe that they were intended for different uſes; that the external intercoſtals, for inſtance, ſerve to elevate, and the internal ones to depreſs the ribs. Fallopius ſeems to have been the firſt who ventured to diſpute the truth of this doctrine, which has ſince been revived by Boyle,

	Name.	*Origin.*	*Inſertion.*	*Uſe.*
	5. Sterno-coſtales (B).	From the cartilago enſiformis, and lower and middle part of the ſternum.	Into the cartilages of the 2d, 3d, 4th, 5th, and 6th ribs.	To depreſs the cartilages of the ribs.
Muscles at the back part of the neck and trunk,	1. Trapezius (C), or cucullaris.	From the middle of the os occipitis, and the ſpinous proceſſes of the two inferior cervical, and of all the dorſal vertebræ (D).	Into the poſterior half of the clavicle, part of the acromion, and the ſpine of the ſcapula.	To move the ſcapula
	2. Rhomboideus (E).	From the ſpinous proceſſes of the three lowermoſt cervical, and of all the dorſal vertebræ.	Into the baſis of the ſcapula.	To move the ſcapula upwards and backwards.
	3. Latiſſimus dorſi.	From part of the ſpine of the os ilium, the ſpinous proceſſes of the os ſacrum and lumbar vertebræ, and of ſix or eight of the dorſal vertebræ; alſo from the four inferior falſe ribs near their cartilages.	Into the os humeri, at the inner edge of the groove for lodging the long head of the biceps muſcle.	To draw the os humeri downwards and backwards, and to roll it upon its axis.
	4. Serratus inferior poſticus.	From the ſpinous proceſſes of the two lowermoſt dorſal, and of three of the lumbar vertebræ.	Into the lower edges of the three or four lowermoſt ribs near their cartilages.	To draw the ribs outwards, downwards, and backwards.
	5. Levator ſcapulæ.	From the tranſverſe proceſſes of the four uppermoſt vertebræ colli.	Into the upper angle of the ſcapula.	To move the ſcapula forwards and upwards.
	6. Serratus ſuperior poſticus.	From the lower part of the ligamentum colli, the ſpinous proceſs of the lowermoſt cervical vertebra, and of the two ſuperior dorſal vertebræ.	Into the 2d, 3d, and 4th ribs.	To expand the thorax.

7. Splenius

Boyle, and more lately ſtill by Hamberger, whoſe theoretical arguments on this ſubject have been clearly refuted by the experiments of Haller.

(B) Theſe conſiſt of four, and ſometimes five diſtinct muſcles on each ſide. Veſalius, and after him Douglas and Albinus, conſider them as forming a ſingle muſcle, which, on account of its ſhape, they name *triangularis*. Verheyen, Winſlow, and Haller, more properly deſcribe them as ſo many ſeparate muſcles, which, on account of their origin and inſertion, they name *ſterno-coſtales*.

(C) So named by Riolanus, from τραπεζα, on account of its quadrilateral ſhape. Columbus and others give it the name of *cucullaris*, from its reſemblance to a monk's hood.

(D) The tendinous fibres of this muſcle, united with thoſe of its fellow in the nape of the neck, form what is called the *ligamentum colli*.

(E) This muſcle conſiſts of two diſtinct portions, which are deſcribed as ſeparate muſcles by Albinus, under the names of *rhomboideus minor* and *rhomboideus major*.

Name.	*Origin.*	*Inſertion.*	*Uſe.*
7. Splenius (F).	From the ſpinous proceſſes of the four or five uppermoſt vertebræ of the back, and of the lowermoſt cervical vertebra.	Into the tranſverſe proceſſes of the two firſt cervical vertebræ, the upper and back part of the maſtoid proceſs, and a ridge on the os occipitis.	To move the head backwards.
8. Complexus (G).	From the tranſverſe proceſſes of the four or five uppermoſt dorſal, and of the ſix lowermoſt cervical vertebræ.	Into the os occipitis.	To draw the head backwards.
9. Trachelo-maſtoideus (H).	From the tranſverſe proceſſes of the firſt dorſal vertebra, and four or five of the lowermoſt cervical vertebræ.	Into the maſtoid proceſs.	To draw the head backwards.
10. Rectus capitis poſticus major.	From the ſpinous proceſs of the ſecond cervical vertebra.	Into the os occipitis.	To extend the head and draw it backwards.
11. Rectus capitis poſticus minor.	From the firſt vertebra of the neck.	Into the os occipitis.	To aſſiſt the rectus major.
12. Obliquus ſuperior capitis.	From the tranſverſe proceſs of the firſt cervical vertebra.	Into the os occipitis.	To draw the head backwards.
13. Obliquus inferior capitis.	From the ſpinous proceſs of the ſecond cervical vertebra.	Into the tranſverſe proceſs of the firſt cervical vertebra.	To draw the face towards the ſhoulder, and to move the firſt vertebra upon the ſecond.
14. Sacro-lumbalis (I).	From the back part of the os ſacrum, ſpine of the ilium, ſpinous proceſſes, and roots of the tranſverſe proceſſes of the vertebræ of the loins.	Into the lower edge of each rib.	To draw the ribs downwards, move the body upon its axis, aſſiſt in erecting the trunk, and turn the neck backwards, or to one ſide.
15. Longiſſimus dorſi (K).	The ſame as that of the ſacro-lumbalis.	Into the tranſverſe proceſſes of the dorſal vertebræ.	To ſtretch the vertebræ of the back, and keep the trunk erect.

16. Spinalis

(F) According to ſome writers, this muſcle has gotten its name from its reſemblance to the ſpleen; others derive it from *ſplenium*, *ſplint*.

(G) So named on account of its complicated ſtructure.

(H) So named from its origin from the neck (τραχηλος) and its inſertion into the maſtoid proceſs.

(I) Several thin faſciculi of fleſhy fibres ariſe from the lower ribs, and terminate in the inner ſide of this muſcle. Stenо names them *muſculi ad ſacro-lumbalem accedentes*. The ſacro-lumbalis likewiſe ſends off a fleſhy ſlip from its upper part, which by Douglas and Albinus is deſcribed as a diſtinct muſcle, under the name of *cervicalis deſcendens*. Morgagni has very properly conſidered it as a part of the ſacro lumbalis.

(K) At the upper part of this muſcle a broad thin layer of fleſhy fibres is found croſſing, and intimately adhering to it. This portion, which is deſcribed by Albinus under the name of *tranſverſalis cervicis*, may very properly be conſidered as an appendage to the longiſſimus dorſi. It ariſes from the tranſverſe proceſſes of the five or ſix ſuperior dorſal vertebræ, and is inſerted into the tranſverſe proceſſes of the ſix inferior cervical vertebræ. By means of this appendage the longiſſimus dorſi may ſerve to move the neck to one ſide, or obliquely backwards.

Of the Muſcles.

	Name.	*Origin.*	*Inſertion.*	*Uſe.*
	16. Spinalis dorſi.	From the ſpinous proceſſes of the uppermoſt lumbar and lowermoſt dorſal vertebræ.	Into the ſpinous proceſſes of the nine ſuperior dorſal vertebræ.	To extend the vertebræ.
	17. Semi-ſpinalis dorſi.	From the tranſverſe proceſſes of the 7th, 8th, 9th, and 10th vertebræ of the back.	Into the ſpinous proceſſes of the four uppermoſt dorſal, and lowermoſt of the cervical vertebræ.	To extend the ſpine obliquely backwards.
	18. Multifidus ſpinæ (L).	From the os ſacrum, ilium, oblique and tranſverſe proceſſes of the lumbar vertebræ, tranſverſe proceſſes of the dorſal, and four of the cervical vertebræ.	Into the ſpinous proceſſes of the lumbar, dorſal, and ſix of the cervical vertebræ.	To extend the back and draw it backwards, or to one ſide.
	19. Semi-ſpinalis colli.	From the tranſverſe proceſſes of the five or ſix uppermoſt dorſal vertebræ.	Into the ſpinous proceſſes of the 2d, 3d, 4th, 5th, and 6th cervical vertebræ.	To ſtretch the neck obliquely backwards.
	20. Scalenus (M).	From the tranſverſe proceſſes of the five inferior cervical vertebræ.	Into the upper and outer part of the firſt and ſecond ribs.	To move the neck forwards, or to one ſide.
	21. Inter-ſpinales (N).	From the upper part of each of the ſpinous proceſſes of the ſix inferior cervical vertebræ.	Into the under part of each of the ſpinous proceſſes of the vertebræ above.	To draw the ſpinous proceſſes towards each other.
	22. Inter-tranſverſales (O).	From the upper part of each of the tranſverſe proceſſes of the vertebræ.	Into the under part of each of the tranſverſe proceſſes of the vertebræ above.	To draw the tranſverſe proceſſes towards each other.
Muscles within the cavity of the abdomen, on the anterior and lateral parts of the ſpine,	1. Pſoas parvus (P).	From the ſides and tranſverſe proceſſes of the uppermoſt lumbar vertebra, and ſometimes of the lowermoſt dorſal vertebra.	Into the brim of the pelvis, at the junction of the os pubis with the ilium.	To bend the loins forwards.

2. Pſoas

(L) Anatomiſts in general have unneceſſarily multiplied the muſcles of the ſpine. Albinus has the merit of having introduced greater ſimplicity into this part of myology. Under the name of *multifidus ſpinæ*, he has very properly included thoſe portions of muſcular fleſh intermixed with tendinous fibres, ſituated cloſe to the back part of the ſpine, and which are deſcribed by Douglas under the names of *tranſverſales colli, dorſi, et lumborum.*

(M) The ancients gave it this name from its reſemblance to an irregular triangle (σκαληνος). It conſiſts of three fleſhy portions. The anterior one affords a paſſage to the axillary artery, and between this and the middle portion we find the nerves going to the upper extremities. The middle is in part covered by the poſterior portion, which is the longeſt and thinneſt of the three.

(N) In the generality of anatomical books we find theſe muſcles divided into *inter-ſpinales cervicis, dorſi,* and *lumborum;* but we do not find any ſuch muſcles either in the loins or back.

(O) Theſe muſcles are to be found only in the neck and loins; what have been deſcribed as the *inter-tranſverſales dorſi* being rather ſmall tendons than muſcles.

(P) This and the following pair of muſcles derive their name of *pſoas* from ψοα, *lumbus*, on account of their ſituation at the anterior part of the loins.

	Name.	*Origin.*	*Inſertion.*	*Uſe.*
	2. Pſoas magnus.	From the bodies and tranſverſe proceſſes of the laſt dorſal, and all the lumbar vertebræ.	Into the os femoris, a little below the trochanter minor.	To bend the thigh forwards.
	3. Iliacus internus.	From the inner lip, hollow part, and edge of the os ilium.	In common with the pſoas magnus.	To aſſiſt the pſoas magnus.
	4. Quadratus lumborum (Q).	From the poſterior part of the ſpine of the ilium.	Into the tranſverſe proceſſes of the four uppermoſt lumbar vertebræ, the inferior edge of the laſt rib, and the ſide of the lowermoſt dorſal vertebra.	To ſupport the ſpine, or to draw it to one ſide.
	5. Coccygæus.	From the poſterior and inner edge of the ſpine of the iſchium.	Into the lower part of the os ſacrum, and almoſt the whole length of the os coccygis laterally.	To draw the os coccygis forwards and inwards (R).
Muscles on the ſcapula and upper part of the os humeri, - - -	1. Deltoides (S).	From the clavicle, proceſſus acromion, and ſpine of the ſcapula.	Into the anterior and middle part of the os humeri.	To raiſe the arm.
	2. Supra-ſpinatus.	From the baſis, ſpine, and upper coſta of the ſcapula.	Into a large tuberoſity at the head of the os humeri.	To raiſe the arm.
	3. Infra-ſpinatus.	From the baſis and ſpine of the ſcapula.	Into the upper and middle part of the tuberoſity.	To roll the os humeri outwards.
	4. Teres minor (T).	From the inferior coſta of the ſcapula.	Into the lower part of the tuberoſity.	To aſſiſt the infra-ſpinatus.
	5. Teres major.	From the inferior angle, and inferior coſta of the ſcapula.	Into the ridge at the inner ſide of the groove formed for the long head of the biceps.	To aſſiſt in the rotatory motion of the arm.
	6. Subſcapularis.	From the baſis, ſuperior and inferior coſtæ of the ſcapula.	Into the upper part of a ſmall tuberoſity at the head of the os humeri.	To roll the arm inwards.
	7. Coraco-brachialis (U).	From the coracoid proceſs of the ſcapula.	Into the middle and inner ſide of the os humeri.	To roll the arm forwards and upwards.

Muscles

(Q) So called from its ſhape, which is that of an irregular ſquare.

(R) Some of the fibres of this muſcle are united with thoſe of the levator ani, ſo that it aſſiſts in cloſing the lower part of the pelvis.

(S) So named from its ſuppoſed reſemblance to the Greek Δ reverſed.

(T) This and the following pair are called *teres*, from their being of a long and round ſhape.

(U) This muſcle affords a paſſage to the muſculo-cutaneous nerve.

Of the Muſcles.

	Name.	*Origin.*	*Inſertion.*	*Uſe.*
Muscles on the os humeri, - -	1. Biceps flexor cubiti.	By two heads, one from the coracoid proceſs, and the other, or long head, from the upper and outer edge of the glenoid cavity of the ſcapula.	Into the tuberoſity at the upper end of the radius.	To bend the fore-arm.
	2. Brachialis internus.	From the os humeri, below, and at each ſide of the tendon of the deltoides.	Into a ſmall tuberoſity at the fore part of the coronoid proceſs of the ulna.	To aſſiſt in bending the fore-arm.
	3. Triceps extenſor cubiti.	By three heads: the firſt, from the inferior coſta of the ſcapula; the ſecond, from the upper and outer part of the os humeri; and the third, from the back part of that bone.	Into the upper and outer part of the olecranon.	To extend the fore-arm.
——— on the fore-arm, - - -	1. Supinator longus.	From the outer ridge and anterior ſurface of the os humeri, a little above its outer condyle.	Into the radius near its ſtyloid proceſs.	To aſſiſt in turning the palm of the hand upwards.
	2. Extenſor carpi radialis longus.	Immediately below the origin of the ſupinator longus.	Into the upper part of the metacarpal bone of the fore-finger.	To extend the wriſt.
	3. Extenſor carpi radialis brevis.	From the outer and lower part of the outer condyle of the os humeri, and the upper part of the radius.	Into the upper part of the metacarpal bone of the middle finger.	To aſſiſt the extenſor longus.
	4. Extenſor digitorum communis.	From the outer condyle of the os humeri.	Into the back part of all the bones of the four fingers.	To extend the fingers.
	5. Extenſor minimi digiti.	From the outer condyle of the os humeri.	Into the bones of the little finger.	To extend the little finger.
	6. Extenſor carpi ulnaris.	From the outer condyle of the os humeri.	Into the metacarpal bone of the little finger.	To aſſiſt in extending the wriſt.
	7. Anconæus (v.)	From the outer condyle of the os humeri.	Into the outer edge of the ulna.	To extend the fore-arm.
	8. Flexor carpi ulnaris.	From the inner condyle of the os humeri, and anterior edge of the olecranon (w).	Into the os piſiforme.	To aſſiſt in bending the hand.
	9. Palmaris longus.	From the inner condyle of the os humeri.	Into the internal annular ligament, and aponeuroſis palmaris (x).	To bend the arm.

(v) So called from *ἀγκων, cubitus.*

(w) Between the two origins of this muſcle we find the ulnar nerve going to the fore-arm.

(x) The aponeuroſis palmaris is a tendinous membrane that extends over the palm of the hand. Some anatomiſts

	Name.	*Origin.*	*Inſertion.*	*Uſe.*
	10. Flexor carpi radialis.	From the inner condyle of the os humeri.	Into the metacarpal bone of the forefinger.	To bend the hand.
	11. Pronator radii teres.	From the outer condyle of the os humeri, and coronoid proceſs of the ulna.	Into the anterior and convex edge of the radius, near its middle.	To roll the hand inwards.
	12. Flexor ſublimis perforatus (y).	From the inner condyle of the os humeri, inner edge of the coronoid proceſs of the ulna, and upper and anterior part of the radius.	Into the ſecond bone of each finger.	To bend the ſecond joint of the fingers.
	13. Supinator radii brevis.	From the outer condyle of the os humeri, and poſterior ſurface and outer edge of the ulna.	Into the anterior, inner, and upper part of the radius.	To roll the radius outwards.
	14. Abductor pollicis longus.	From the middle and back part of the ulna, interoſſeous ligament, and radius.	By two tendons into the os trapezium, and firſt bone of the thumb.	To ſtretch the firſt bone of the thumb outwards.
	15. Extenſor minor pollicis.	From the back part of the ulna, and interoſſeous ligament and radius.	Into the convex part of the ſecond bone of the thumb.	To extend the ſecond bone of the thumb obliquely outwards.
	16. Extenſor major pollicis.	From the back of the ulna and interoſſeous ligament.	Into the third and laſt bone of the thumb.	To ſtretch the thumb obliquely backwards.
	17. Indicator.	From the middle of the ulna.	Into the metacarpal bone of the forefinger.	To extend the forefinger.
	18. Flexor profundus perforans.	From the upper and fore part of the ulna, and interoſſeous ligament.	Into the fore part of the laſt bone of each of the fingers.	To bend the laſt joint of the fingers.
	19. Flexor longus pollicis.	From the upper and fore part of the radius.	Into the laſt joint of the thumb.	To bend the laſt joint of the thumb.
	20. Pronator radii quadratus.	From the inner and lower part of the ulna.	Into the radius, oppoſite to its origin.	To roll the radius inwards, and of courſe to aſſiſt in the pronation of the hand.
Muscles on the hand,	1. Lumbricales (z).	From the tendons of the perforans.	Into the tendons of the extenſor digitorum communis.	To bend the firſt, and to extend the two laſt joints of the fingers (a).

2. Abductor

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tomiſts have ſuppoſed it to be a production of the tendon of this muſcle, but without ſufficient grounds; for in ſome ſubjects we find the palmaris longus inſerted wholly into the annular ligament, ſo as to be perfectly diſtinct from this aponeuroſis; and it now and then happens, that no palmaris longus is to be found, whereas this expanſion is never deficient.

(y) This muſcle is named *perforatus*, on account of the four tendons in which it terminates, being perforated by thoſe of another muſcle, the perforans.

(z) So named from their being ſhaped ſomewhat like the lumbricus or earth-worm.

(a) F. Lopius was the firſt who remarked the two oppoſite uſes of this muſcle. Their extending power is owing to their connexion with the extenſor communis.

	Name.	*Origin.*	*Insertion.*	*Use.*
	2. Abductor brevis pollicis.	From the fore part of the internal annular ligament, os scaphoides, and one of the tendons of the abductor longus pollicis.	Into the outer side of the 2d bone of the thumb, near its root.	To move the thumb from the fingers.
	3. Opponens pollicis.	From the inner and anterior part of the internal annular ligament, and from the os scaphoides.	Into the first bone of the thumb.	To move the thumb inwards, and to turn it upon its axis.
	4. Flexor brevis pollicis.	From the os trapezoides, internal annular ligament, os magnum, and os unciforme.	Into the ossa sesamoidea and second bone of the thumb.	To bend the second joint of the thumb.
	5. Adductor pollicis.	From the metacarpal bone of the middle finger.	Into the basis of the second bone of the thumb.	To move the thumb towards the fingers.
	6. Abductor indicis.	From the inner side of the first bone of the thumb, and from the os trapezium.	Into the first bone of the fore finger posteriorly.	To move the fore finger towards the thumb.
	7. Palmaris brevis.	From the internal annular ligament, and aponeurosis palmaris.	Into the os pisiforme, and the skin covering the abductor minimi digiti.	To contract the palm of the hand.
	8. Abductor minimi digiti.	From the internal annular ligament, and os pisiforme.	Into the side of the first bone of the little finger.	To draw the little finger from the rest.
	9. Flexor parvus minimi digiti.	From the os unciforme and internal annular ligament.	Into the first bone of the little finger.	To bend the little finger.
	10. Adductor metacarpi minimi digiti.	From the os unciforme, and internal annular ligament.	Into the metacarpal bone of the little finger.	To move that bone towards the rest.
	11. Interossei interni.	Situated between the metacarpal bones.	Into the roots of the fingers.	To extend the fingers, and move them towards the thumb (B).
	12. Interossei externi.	Situated between the metacarpal bones on the back of the hand.	Into the roots of the fingers.	To extend the fingers; but the first draws the middle finger inwards, the second draws it outwards, and the third draws the ring finger inwards.
Muscles at the back part of the pelvis, and upper part of the thigh,	1. Glutæus (C) maximus.	From the spine of the ilium, posterior sacro-ischiatic ligaments, os sacrum, and os coccygis.	Into the upper part of the *linea aspera* of the os femoris.	To extend the thigh and draw it outwards.

(B) The third interosseus internus (for there are four of the externi and three of the interni) differs from the rest in drawing the middle finger from the thumb.

(C) From γλυτος, *nates*.

	Name.	*Origin.*	*Inſertion.*	*Uſe.*
	2. Glutæus medius.	From the ſpine and ſuperior ſurface of the ilium.	Into the outer and back part of the great trochanter of the os femoris.	To draw the thigh outwards and a little backwards, and when it is bended, to roll it.
	3. Glutæus minimus.	From the outer ſurface of the ilium and the border of its great niche.	Into the upper and anterior part of the great trochanter.	To aſſiſt the former.
	4. Pyriformis (D).	From the anterior part of the os ſacrum.	Into a cavity at the root of the trochanter major.	To roll the thigh outwards.
	5. Gemini (E).	By two portions, one from the outer ſurface of the ſpine of the iſchium; the other from the tuberoſity of the iſchium and poſterior ſacro-iſchiatic ligament.	Into the ſame cavity as the pyriformis.	To roll the thigh outwards, and likewiſe to confine the tendon of the obturator internus, when the latter is in action.
	6. Obturator internus.	From the ſuperior half of the inner border of the foramen thyroideum.	Into the ſame cavity with the former.	To roll the thigh outwards.
	7. Quadratus (F) femoris.	From the tuberoſity of the iſchium.	Into a ridge between the trochanter major and trochanter minor.	To move the thigh outwards.
Muscles on the thigh (G),	1. Biceps flexor cruris.	By two heads; one from the tuberoſity of the iſchium, the other from the linea aſpera near the inſertion of the glutæus maximus.	Into the upper and back part of the fibula (H).	To bend the leg.
	2. Semi-tendinoſus.	From the tuberoſity of the iſchium.	Into the upper and inner part of the tibia.	To bend and draw the leg inwards.
	3. Semi-membranoſus (I).	From the tuberoſity of the iſchium.	Into the upper and back part of the head of the tibia.	To bend the leg.
	4. Tenſor vaginæ femoris.	From the ſuperior and anterior ſpinous proceſs of the ilium.	Into the inner ſide of the faſcia lata, which covers the outſide of the thigh.	To ſtretch the faſcia.
	5. Sartorius.			

(D) So named from its pear-like ſhape.

(E) The two portions of this muſcle having been deſcribed as two diſtinct muſcles by ſome anatomiſts, have occaſioned it to be named *gemini*. The tendon of the obturator internus runs between theſe two portions.

(F) The muſcle is not of the ſquare ſhape its name would ſeem to indicate.

(G) The muſcles of the leg and thigh are covered by a broad tendinous membrane called *faſcia lata*, that ſurrounds them in the manner of a ſheath. It is ſent off from the tendons of the glutæi and other muſcles, and dipping down between the muſcles it covers, adheres to the linea aſpera, and ſpreading over the joint of the knee, gradually diſappears on the leg. It is thickeſt on the inſide of the thigh.

(H) The tendon of this muſcle forms the *outer ham-ſtring*.

(I) So named on account of its origin, which is by a broad flat tendon three inches long.

Of the Muſcles.

Name.	Origin.	Inſertion.	Uſe.
5. Sartorius.	From the ſuperior and anterior ſpinous proceſs of the ilium.	Into the upper and inner part of the tibia.	To bend the leg inwards (K).
6. Rectus.	By two tendons; one from the anterior and inferior ſpinous proceſs of the ilium; the other from the poſterior edge of the cotyloid cavity.	Into the upper and fore part of the patella.	To extend the leg.
7. Gracilis.	From the fore part of the iſchium and pubis.	Into the upper and inner part of the tibia.	To bend the leg.
8. Vaſtus externus (L).	From the anterior and lower part of the great trochanter, and the outer edge of the linea aſpera.	To the upper and outer part of the patella.	To extend the leg.
9. Vaſtus internus.	From the inner edge of the linea aſpera, beginning between the fore part of the os femoris and the root of the leſſer trochanter.	Into the upper and inner part of the patella.	To extend the leg
10. Cruræus (M).	From the outer and anterior part of the leſſer trochanter.	Into the upper part of the patella.	To extend the leg
11. Pectinalis.	From the anterior edge of the os pubis, or pectinis, as it is ſometimes called.	Into the upper and fore part of the linea aſpera.	To draw the thigh inwards, upwards, and to roll it a little outwards.
12. Adductor longus femoris (N).	From the upper and fore part of the os pubis.	Near the middle and back part of the linea aſpera.	To draw the thigh inwards, upwards, and to roll it a little outwards.
13. Adductor brevis femoris.	From the fore part of the ramus of the os pubis.	Into the inner and upper part of the linea aſpera.	
14. Adductor magnus femoris.	From the lower and fore part of the ramus of the os pubis.	Into the whole length of the linea aſpera.	
15. Obturator externus.	From part of the obturator ligament, and the inner half of the circumference of the foramen thyroideum.	Into the os femoris, near the root of the great trochanter.	To move the thigh outwards in an oblique direction, and likewiſe to bend and draw it inwards.

Muscles

(K) Spigelius was the firſt who gave this the name of *ſartorius*, or the taylor's muſcle, from its uſe in croſſing the legs.

(L) The vaſtus externus, vaſtus internus, and cruræus, are ſo intimately connected with each other, that ſome anatomiſts have been induced to conſider them as a *triceps*, or ſingle muſcle with three heads.

(M) Under the cruræus we ſometimes meet with two ſmall muſcles, to which Albinus has given the name of *ſub-cruræi*. They terminate on each ſide of the patella, and prevent the capſular ligament from being pinched. When they are wanting, which is very often the caſe, ſome of the fibres of the cruræus are found adhering to the capſula.

(N) This and the two following muſcles have been uſually, but improperly, conſidered as forming a ſingle muſcle with three heads, and on that account named *triceps femoris*.

	Name.	*Origin.*	*Insertion.*	*Use.*
MUSCLES on the leg.	1. Gastrocnemius (o) externus.	By two heads; one from the inner condyle, the other from the outer condyle, of the os femoris.	By a great round tendon, common to this and the following muscle.	To extend the foot.
	2. Gastrocnemius (p) internus.	By two heads; one from the back part of the head of the fibula, the other from the upper and back part of the tibia.	By a large tendon (the *tendo achillis*) common to this and the former muscle, into the lower and back part of the os calcis.	To extend the foot.
	3. Plantaris (q).	From the upper and posterior part of the outer condyle of the os femoris.	Into the inside of the back part of the os calcis.	To assist in extending the foot.
	4. Popliteus (r).	From the outer condyle of the thigh.	Into the upper and inner part of the tibia.	To assist in bending the leg and rolling it inwards.
	5. Flexor longus digitorum pedis (s).	From the upper and inner part of the tibia.	By four tendons, which, after passing through the perforations in those of the flexor digitorum brevis, are inserted into the last bone of all the toes, except the great toe.	To bend the last joint of the toe.
	6. Flexor longus pollicis pedis.	From the back part, and a little below the head of the fibula.	Into the last bone of the great toe.	To bend the great toe.
	7. Tibialis posticus.	From the back part and outer edge of the tibia, and likewise from the interosseous ligament and adjacent part of the fibula.	Into the inner and upper part of the os naviculare and side of the os cuneiforme medium.	To move the foot inwards.
	8. Peroneus longus.	From the outer side of the head of the tibia, and also from the upper, anterior, and outer part of the *perone* or fibula, to which it adheres for a considerable way down.	Into the metatarsal bone of the great toe.	To move the foot outwards.
	9. Peroneus brevis.	From the outer and fore part of the fibula.	Into the metatarsal bone of the little toe.	To assist the last described muscle.

10. Extensor

(o) Γαστροκνημια, *sura*, "the calf of the leg."

(p) This muscle is by some anatomists named *soleus*, on account of its being shaped like the sole-fish.

(q) This muscle has gotten the name of *plantaris*, from its being supposed to furnish the aponeurosis that covers the sole of the foot; but it does not in the least contribute to the formation of that tendinous expansion.

(r) So called on account of its situation at the ham (*poples*).

(s) This muscle, about the middle of the foot, unites with a fleshy mass, which, from its having first been described by Sylvius, is usually called *massa carnea* JACOBI SYLVII.

	Name.	*Origin.*	*Inſertion.*	*Uſe.*
	10. Extenſor longus digitorum pedis.	From the upper, outer, and fore part of the tibia, interoſſeous ligament, and inner edge of the fibula.	By four tendons into the firſt joint of the ſmaller toes.	To extend the toes.
	11. Peroneus tertius.	From the fore part of the lower half of the fibula, and from the interoſſeous ligament.	Into the metatarſal bone of the little toe.	To bend the foot.
	12. Tibialis anticus.	From the upper and fore part of the tibia.	Into the os cuneiforme internum.	To bend the foot.
	13. Extenſor proprius pollicis pedis.	From the upper and fore part of the tibia.	Into the convex ſurface of the bones of the great toe.	To extend the great toe.
Muscles on the foot,	1. Extenſor brevis digitorum pedis.	From the upper and anterior part of the os calcis.	By four tendons; one of which joins the tendon of the externus longus pollicis, and the other three the tendons of the extenſor digitorum longus.	To extend the toes.
	2. Flexor brevis digitorum pedis.	From the lower part of the os calcis.	By four tendons, which, after affording a paſſage to thoſe of the flexor longus, are inſerted into the ſecond phalanx of each of the ſmall toes.	To bend the ſecond joint of the toes.
	3. Abductor pollicis pedis.	From the inner and lower part of the os calcis.	Into the firſt joint of the great toe.	To move the great toe from the other toes.
	4. Abductor minimi digiti.	From the outer tubercle of the os calcis, the root of the metatarſal bone of the little toe, and alſo from the aponeuroſis plantaris.	Into the outer ſide of the firſt joint of the little toe.	To draw the little toe outwards.
	5. Lumbricales pedis.	From the tendons of the flexor longus digitorum pedis.	Into the tendinous expanſion at the upper part of the toes.	To draw the toes inwards.
	6. Flexor brevis pollicis pedis.	From the inferior and anterior part of the os calcis, and alſo from the inferior part of the os cuneiforme externum.	By two tendons into the firſt joint of the great toe.	To bend the firſt joint of the great toe.
	7. Adductor pollicis pedis.	From near the roots of the metatarſal bones of the 2d, 3d, and 4th toes.	Into the outer os ſeſamoideum, or firſt joint of the great toe.	To draw the great toe nearer to the reſt, and alſo to bend it.
	8. Tranſverſales pedis.	From the outer and under part of the anterior end of the metatarſal bone of the little toe.	Into the inner os ſeſamoideum, and anterior end of the metatarſal bone of the great toe.	To contract the foot.

Name.	Origin.	Inſertion.	Uſe.
9. Flexor brevis minimi digiti pedis.	From the baſis of the metatarſal bone of the little toe.	Into the firſt joint of the little toe.	To bend the little toe.
10. Interoſſei pedis interni (t).	Situated between the metatarſal bones		
11. Interoſſei externi (u).			

EXPLANATION of PLATES XXV. and XXVI.

Plate XXV.

Fig. 1. The Muscles immediately under the common teguments on the anterior part of the body are repreſented on the right ſide; and on the left ſide the Muscles are ſeen which come in view when the exterior ones are taken away.

A, The frontal muſcle. B, The tendinous aponeuroſis which joins it to the occipital; hence both named *occipito-frontalis*. C, Attollens aurem. D, The ear. E, Anterior auris. FF, Orbicularis palpebrarum. G, Levator labii ſuperioris alæque naſi. H, Levator anguli oris. I, Zygomaticus minor. K, Zygomaticus major. L, Maſſeter. M, Orbicularis oris. N, Depreſſor labii inferioris. O, Depreſſor anguli oris. P, Buccinator. QQ, Platyſma myoides. RR, Sterno-cleido-maſtoidæus. S, Part of the trapezius. T, Part of the ſcaleni.

Superior Extremity.—U, Deltoides. V, Pectoralis major. W, Part of the latiſſimus dorſi. XX, Biceps flexor cubiti. YY, Part of the brachialis externus. ZZ, The beginning of the tendinous aponeuroſis (from the biceps), which is ſpread over the muſcles of the fore arm. aa, Its ſtrong tendon inſerted into the tubercle of the radius. bb, Part of the brachialis internus. c, Pronator radii teres. d, Flexor carpi radialis. e, Part of the flexor carpi ulnaris. f, Palmaris longus. g, Aponeuroſis palmaris. 3, Palmaris brevis. 1, Ligamentum carpi annulare. 22, Abductor minimi digiti. h, Supinator radii longus. i, The tendons of the thumb. k, Abductor pollicis. l, Flexor pollicis longus. mm, The tendons of the flexor ſublimis perforatus, profundus perforans, and lumbricales.—The ſheaths are entire in the right hand, —in the left cut open, to ſhow the tendons of the flexor profundus perforating the ſublimis.

Muscles not referred to—in the left ſuperior extremity.—n, Pectoralis minor, ſeu ſerratus anticus minor. o, The two heads of (xx) the biceps. p, Coracobrachialis. qq, The long head of the triceps extenſor cubiti. rr, Teres major. ſſ, Subſcapularis. tt, Extenſores radiales. u, Supinator brevis. v, The cut extremity of the pronator teres. w, Flexor ſublimis perforatus. x, Part of the flexor profundus. y, Flexor pollicis longus. z, Part of the flexor pollicis brevis. 4, Abductor minimi digiti. 5, The four lumbricales.

Trunk.—6, Serrated extremities of the ſerratus anticus major. 7 7, Obliquus externus abdominis. 8 8, The linea alba. 9, The umbilicus. 10, Pyramidalis. 11 11, The ſpermatic cord. On the left ſide it is covered by the cremaſter. 12 12, Rectus abdominis. 13, Obliquus internus. 14 14, &c. Intercoſtal muſcles.

Inferior Extremities.—*a a*, The gracilis. *b b*, Part of the triceps. *c c*, Pectinalis. *d d*, Pſoas magnus. *e e*, Iliacus internus. *f*, Part of the glutæus medius. *g*, Part of the glutæus minimus. *h*, Cut extremity of the rectus cruris. *i i*, Vaſtus externus. *k*, Tendon of the rectus cruris. *l l*, Vaſtus internus. * Sartorius muſcle. * * Fleſhy origin of the tenſor vaginæ femoris or membranoſus. Its tendinous aponeuroſis covers (*i*) the vaſtus externus in the right ſide. *m m*, Patella. *n n*, Ligament or tendon from it to the tibia. *o*, Rectus cruris. *p*, Cruræus. *q q*, The tibia. *r r*, Part of the gemellus or gaſtrocnemius externus. *ſſſ*, Part of the ſoleus or gaſtrocnemius internus. *t*, Tibialis anticus. *u*, Tibialis poſticus. *v v*, Pæronæi muſcles. *w w*, Extenſor longus digitorum pedis. *x x*, Extenſor longus pollicis pedis. *y*, Abductor pollicis pedis.

Fig. 2. The Muscles, Glands, &c. of the left Side of the Face and Neck, after the common Teguments and Platyſma myoides have been taken off.

a, The frontal muſcle. b, Temporalis and temporal artery. c, Orbicularis palpebrarum. d, Levator labii ſuperioris alæque naſi. e, Levator anguli oris. f, Zygomaticus. g, Depreſſor labii inferioris. h, Depreſſor anguli oris. i, Buccinator. k, Maſſeter. ll, Parotid gland. m, Its duct. n, Sterno-cleido-maſtoidæus. o, Part of the trapezius. p, Sterno-hyoidæus. q, Sterno-thyroidæus. r, Omo-hyoidæus. ſ, Levator ſcapula. tt, Scaleni. u, Part of the ſplenius.

Fig. 3. The Muscles of the Face and Neck in view after the exterior ones are taken away.

a a, Corrugator ſupercilii. b, Temporalis. c, Tendon of the levator palpebræ ſuperioris. d, Tendon of the orbicularis palpebrarum. e, Maſſeter. f, Buccinator. g, Levator anguli oris. h, Depreſſor labii ſuperioris alæque naſi. i, Orbicularis oris. k, Depreſſor anguli oris. l, Muſcles of the os hyoides. m, Sterno-cleido-maſtoidæus.

Fig.

(t) The interoſſei interni are three in number; their uſe is to draw the ſmaller toes towards the great toe.

(u) The interoſſei externi are four in number; the firſt ſerves to move the fore toe towards the great toe; the reſt move the toes outwards. All the interoſſei aſſiſt in extending the toes.

Of the Abdomen.

Fig. 4. Some of the Muscles of the Os Hyoides and Submaxillary Gland.

a, Part of the maſeter muſcle. b, Poſterior head of the digaſtric. c, Its anterior head. dd, Sterno-hyoidæus. e, Omo-hyoidæus. f, Stylo-hyoidæus. g, Submaxillary gland in ſitu.

Fig. 5. The Submaxillary Gland and Duct.

a, Muſculus mylo-hyoidæus. b, Hyo-gloſſus. c, Submaxillary gland extra ſitum. d, Its duct.

Plate XXVI.

Fig. 1. The Muscles immediately under the common tegaments on the poſterior part of the body are repreſented in the right ſide; and on the left ſide the Muscles are ſeen which come in view when the exterior ones are taken away.

Head.—AA, Occipito-frontalis. B, Attollens aurem. C, Part of the orbicularis palpebrarum. D, Maſſeter. E, Pterygoidæus internus.

Trunk.—Right ſide. FFF, Trapezius ſeu cucullaris. GGGG, Latiſſimus dorſi. H, Part of the obliquus externus abdominis.

Trunk.—Left ſide. I, Splenius. K, Part of the complexus. L, Levator ſcapulæ. M, Rhomboides. NN, Serratus poſticus inferior. O, Part of the longiſſimus dorſi. P, Part of the ſacro-lumbalis. Q, Part of the ſemi-ſpinalis dorſi. R, Part of the ſerratus anticus major. S, Part of the obliquus internus abdominis.

Superior Extremity.—Right ſide. T, Deltoides. U, Triceps extenſor cubiti. V, Supinator longus. WW, Extenſores carpi radialis longior and brevior. XX, Extenſor carpi ulnaris. YY, Extenſor digitorum communis. Z, Abductor indicis. 1 2 3, Extenſores pollicis.

Superior Extremity.—Left ſide. a, Supra-ſpinatus. b, Infra-ſpinatus. c, Teres minor. d, Teres major. e, Triceps extenſor cubiti. ff, Extenſores carpi radiales. g, Supinator brevis. h, Indicator. 1 2 3, Extenſores pollicis. i, Abductor minimi digiti. k, Interoſſei.

Inferior Extremity.—Right ſide. l, Glutæus maximus. m, Part of the glutæus medius. n, Tenſor vaginæ femoris. o, Gracilis. pp, Adductor femoris magnus. q, Part of the vaſtus internus. r, Semimembranoſus. s, Semitendinoſus. t, Long head of the biceps flexor cruris. uu, Gaſtrocnemius externus ſeu gemellus. v, Tendo Achillis. w, Soleus ſeu gaſtrocnemius internus. xx, Peronæus longus and brevis. y, Tendons of the flexor longus digitorum pedis;—and under them * flexor brevis digitorum pedis. z, Abductor minimi digiti pedis.

Inferior Extremity.—Left ſide. *m*, *n*, *o*, *p p*, *q*, *r*, *s*, *t*, *v*, *w w*, *x x*, *y*, *z*, Point the ſame parts as in the right ſide. *a*, Pyriformis. *bb*, Gemini. *cc*, Obturator internus. *d*, Quadratus femoris. *e*, Coccygæus. *f*, The ſhort head of the biceps flexor cruris. *gg*, Plantaris. *h*, Poplitæus. *i*, Flexor longus pollicis pedis.

Fig. 2. The Palm of the Left Hand after the common Tegaments are removed, to ſhow the Muscles of the Fingers.

a, Tendon of the flexor carpi radialis. b, Tendon of the flexor carpi ulnaris. c, Tendons of the flexor ſublimis perforatus, profundus perforans, and lumbricales. d, Abductor pollicis. ee, Flexor pollicis longus. f, Flexor pollicis brevis. g, Palmaris brevis. h, Abductor minimi digiti. i, Ligamentum carpi annulare. k, A probe put under the tendons of the flexor digitorum ſublimis; which are perforated by l, the flexor digitorum profundus. mmmm, Lumbricales. n, Adductor pollicis.

Fig. 3. A Fore view of the Foot and tendons of the Flexores Digitorum.

a, Cut extremity of the tendo Achillis. b, Upper part of the aſtragalus. c, Os calcis. d, Tendon of the tibialis anticus. e, Tendon of the extenſor pollicis longus. f, Tendon of the peronæus brevis. g, Tendons of the flexor digitorum longus, with the nonus Veſalii. hh, The whole of the flexor digitorum brevis.

Fig. 4. Muscles of the Anus.

aa, An outline of the buttocks, and upper part of the thighs. b, The teſtes contained in the ſcrotum. cc, Sphincter ani. d, Anus. e, Levator ani. ff, Erector penis. gg, Accelerator urinæ. h, Corpus cavernoſum urethræ.

Fig. 5. Muscles of the Penis.

aa, b, d, ee, ff, h, point the ſame as in fig. 4. c, Sphincter ani. gg, Tranſverſalis penis.

CHAP. III. OF THE ABDOMEN, OR LOWER BELLY.

§ 3

THE abdomen, or lower belly, extends from the lower extremity of the ſternum, or the hollow uſually called the pit of the ſtomach, and more properly *ſcrobiculus cordis*, to the lower part of the trunk.

It is diſtinguiſhed into three diviſions called *regions*; of theſe the upper one, which is called the *epigaſtric region*, begins immediately under the ſternum, and extends to within two fingers breadth of the navel, where the middle or *umbilical region* begins, and reaches to the ſame diſtance below the navel. The third, which is called the *hypogaſtric*, includes the reſt of the abdomen, as far as the os pubis.

Each of theſe regions is ſubdivided into three others; two of which compoſe the ſides, and the other the middle part of each region.

The middle part of the upper region is called *epigaſtrium*, and its two ſides *hypochondria*. The middle part of the next region is the umbilical region, properly ſo called, and its two ſides are the flanks, or iliac regions. Laſtly, The middle part of the lower region retains the name of hypogaſtrium, and its ſides are called inguina or groins. The back part of the abdomen bears the name of lumbar region.

Theſe are the diviſions of the lower belly, which are neceſſary to be held in remembrance, as they frequently occur in ſurgical and anatomical writing. We will now proceed to examine the contents of the abdomen; and after having pointed out the names and arrangement of the ſeveral viſcera contained in it, deſcribe each of them ſeparately.

Of the Abdomen.

After having removed the ſkin, adipoſe membrane, and abdominal muſcles, we diſcover the peritonæum or membrane that envelopes all the viſcera of the lower belly. This being opened, the firſt part that preſents itſelf is the omentum or cawl, floating on the ſurface of the inteſtines, which are likewiſe ſeen everywhere looſe and moiſt, and making a great number of circumvolutions through the whole cavity of the abdomen. The ſtomach is placed in the epigaſtrium, and under the ſtomach is the pancreas. The liver fills the right hypochondrium, and the ſpleen is ſituated in the left. The kidneys are ſeen about the middle of the lumbar region, and the urinary bladder and parts of generation are ſeated in the lower diviſion of the belly.

Sect. I. *Of the Peritonæum.*

89 The peritonæum is a ſtrong ſimple membrane, by which all the viſcera of the abdomen are ſurrounded, and in ſome meaſure ſupported. Many anatomical writers, particularly Winſlow, have deſcribed it as being compoſed of two diſtinct membranous laminæ; but their deſcription ſeems to be erroneous: what perhaps appeared to be a ſecond lamina, being found to be ſimply a cellular coat, which ſends off productions to the blood-veſſels paſſing out of the abdominal cavity. The aorta and vena cava likewiſe derive a covering from the ſame membrane, which ſeems to be a part of the cellular membrane we have already deſcribed.

The peritonæum, by its productions and reduplications, envelopes the greateſt part of the abdominal viſcera. It is ſoft, and capable of conſiderable extenſion; and is kept ſmooth and moiſt by a vapour, which is conſtantly exhaling from its inner ſurface, and is returned again into the circulation by the abſorbents.

This moiſture not only contributes to the ſoftneſs of the peritonæum, but prevents the attrition, and other ill effects, which would otherwiſe probably be occaſioned by the motion of the viſcera upon each other.

When this fluid is ſupplied in too great a quantity, or the abſorbents become incapable of carrying it off, it accumulates, and conſtitutes an aſcites or dropſy of the belly; and when by any means the exhalation is diſcontinued, the peritonæum thickens, becomes diſeaſed, and the viſcera are ſometimes found adhering to each other.

The peritonæum is not a very vaſcular membrane. In a ſound ſtate it ſeems to be endued with little or no feeling, and the nerves that paſs through it appear to belong to the abdominal muſcles.

Sect. II. *Of the Omentum.*

90 The omentum, epiploon, or cawl, is a double membrane, produced from the peritonæum. It is interlarded with fat, and adheres to the ſtomach, ſpleen, duodenum, and colon; from thence hanging down looſe and floating on the ſurface of the inteſtines. Its ſize is different in different ſubjects. In ſome it deſcends as low as the pelvis, and it is commonly longer at the left ſide than the right.

Of the Abdomen.

This part, the ſituation of which we have juſt now deſcribed, was the only one known to the ancients under the name of *epiploon*; but at preſent we diſtinguiſh three omenta, viz. *omentum magnum colico-gaſtricum*, *omentum parvum hepatico-gaſtricum*, and *omentum colicum*. They all agree in being formed of two very delicate laminæ, ſeparated by a thin layer of cellular membrane.

The omentum magnum colico-gaſtricum, of which we have already ſpoken, derives its arteries from the ſplenic and hepatic. Its veins terminate in the vena portæ. Its nerves, which are very few, come from the ſplenic and hepatic plexus.

The omentum parvum hepatico-gaſtricum abounds leſs with fat than the great epiploon. It begins at the upper part of the duodenum, extends along the leſſer curvature of the ſtomach as far as the œſophagus, and terminates about the neck of the gall-bladder, and behind the left ligament of the liver, ſo that it covers the leſſer lobe; near the beginning of which we may obſerve a ſmall opening, firſt deſcribed by Winſlow, through which the whole pouch may eaſily be diſtended with air (x). The veſſels of the omentum parvum are derived chiefly from the coronary ſtomachic arteries and veins.

The omentum colicum begins at the fore part of the cæcum and right ſide of the colon. It appears as a hollow conical appendage to theſe inteſtines, and uſually terminates at the back of the omentum magnum. It ſeems to be nothing more than a membranous coat of the cæcum and colon, aſſuming a conical ſhape when diſtended with air.

The uſes of the omentum are not yet ſatisfactorily determined. Perhaps by its ſoftneſs and looſeneſs it may ſerve to prevent thoſe adheſions of the abdominal viſcera, which have been found to take place when the fat of the omentum has been much waſted. Some authors have ſuppoſed, that it aſſiſts in the preparation of bile; but this is founded merely on conjecture.

Sect. III. *Of the Stomach.*

91 The ſtomach is a membranous and muſcular bag, in ſhape not unlike a bagpipe, lying acroſs the upper part of the abdomen, and inclining rather more to the left than the right ſide.

It has two orifices, one of which receives the end of the œſophagus, and is called the *cardia*, and ſometimes the left and upper orifice of the ſtomach; though its ſituation is not much higher than the other, which is ſtyled the right and inferior orifice, and more commonly the *pylorus*; both theſe openings are more elevated than the body of the ſtomach.

The aliment paſſes down the œſophagus into the ſtomach through the cardia, and after having undergone

(x) This membranous bag, though exceedingly thin and tranſparent, is found capable of ſupporting mercury, thrown into it by the ſame channel.

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gone the neceſſary digeſtion, paſſes out at the pylorus where the inteſtinal canal commences.

The ſtomach is compoſed of four tunics or coats, which are ſo intimately connected together that it requires no little dexterity in the anatomiſt to demonſtrate them. The exterior one is membranous, being derived from the peritonæum. The ſecond is a muſcular tonic, compoſed of fleſhy fibres which are in the greateſt number about the two orifices. The third is called the nervous coat, and within this is the villous or velvet-like coat which compoſes the inſide of the ſtomach.

The two laſt coats being more extenſive than the two firſt, form the folds, which are obſerved everywhere in the cavity of this viſcus, and more particularly about the pylorus; where they ſeem to impede the too haſty exclusion of the aliment, making a conſiderable plait, called *valvula pylori*.

The inner coat is conſtantly moiſtened by a mucus, which approaches to the nature of the ſaliva, and is called the gaſtric juice: this liquor has been ſuppoſed to be ſecreted by certain minute glands (y) ſeated in the nervous tunic, whoſe excretory ducts open on the ſurface of the villous coat.

The arteries of the ſtomach called the gaſtric arteries are principally derived from the cæliac; ſome of its veins paſs to the ſplenic, and others to the vena portæ; and its nerves are chiefly from the eighth pair or par vagum.

The account given of the tunics of the ſtomach may be applied to the whole alimentary canal; for both the œſophagus and inteſtines are, like this viſcus, compoſed of four coats.

Before we deſcribe the courſe of the aliment, and the uſes of the ſtomach, it will be neceſſary to ſpeak of other parts which aſſiſt in the proceſs of digeſtion.

Sect. IV. *Of the Oeſophagus.*

92 The œſophagus or gullet is a membranous and muſcular canal, extending from the bottom of the mouth to the upper orifice of the ſtomach. Its upper part, where the aliment is received, is ſhaped ſomewhat like a funnel, and is called the *pharynx*.

From hence it runs down cloſe to the bodies of the vertebræ as far as the diaphragm, in which there is an opening through which it paſſes, and then terminates in the ſtomach about the eleventh or twelfth vertebra of the back.

The œſophagus is plentifully ſupplied with arteries from the external carotid, bronchial, and ſuperior intercoſtal arteries; its veins empty themſelves into the vena azygos, internal jugular, and mammary veins, &c.

Its nerves are derived chiefly from the eighth pair.

We likewiſe meet with a mucus in the œſophagus, which everywhere lubricates its inner ſurface, and tends to aſſiſt in deglutition. This mucus ſeems to be ſecreted by very minute glands, like the mucus in other parts of the alimentary canal.

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Sect. V. *Of the Inteſtines.*

93 The inteſtines form a canal, which is uſually ſix times longer than the body to which it belongs. This canal extends from the pylorus, or inferior orifice of the ſtomach, to the anus.

It will be eaſily underſtood, that a part of ſuch great length muſt neceſſarily make many circumvolutions, to be confined with ſo many other viſcera within the cavity of the lower belly.

Although the inteſtines are in fact, as we have obſerved, only one long and extenſive canal, yet different parts have been diſtinguiſhed by different names.

The inteſtines are firſt diſtinguiſhed into two parts, one of which begins at the ſtomach, and is called the *thin* or *ſmall inteſtines*, from the ſmall ſize of the canal, when compared with the other part, which is called the *large inteſtines*, and includes the lower portion of the canal down to the anus.

Each of theſe parts has its ſubdiviſions. The ſmall inteſtines being diſtinguiſhed into duodenum, jejunum, and ileum, and the larger portion into cæcum, colon, and rectum.

The ſmall inteſtines fill the middle and fore parts of the belly, while the large inteſtines fill the ſides and both the upper and lower parts of the cavity.

The duodenum, which is the firſt of the ſmall inteſtines, is ſo called, becauſe it is about 12 inches long. It begins at the pylorus, and terminates in the jejunum, which is a part of the canal obſerved to be uſually more empty than the other inteſtines. This appearance gives it its name, and likewiſe ſerves to point out where it begins.

The next diviſion is the ileum, which of itſelf exceeds the united length of the duodenum and jejunum, and has received its name from its numerous circumvolutions. The large circumvolution of the ileum covers the firſt of the large inteſtines called the *cæcum* (z), which ſeems properly to belong to the colon, being a kind of pouch of about four fingers in width, and nearly of the ſame length, having exteriorly a little appendix, called *appendix cæci*.

The cæcum is placed in the cavity of the os ilium on the right ſide, and terminates in the colon, which is the largeſt of all the inteſtines.

This inteſtine aſcends by the right kidney to which it is attached, paſſes under the hollow part of the liver, and the bottom of the ſtomach, to the ſpleen, to which it is likewiſe ſecured, as it is alſo to the left kidney, and from thence paſſes down towards the os ſacrum,

(y) Heiſter, ſpeaking of theſe glands, very properly ſays, "in *porcis* facile, in *homine* raro obſervantur;" for although many anatomical writers have deſcribed their appearance and figure, yet they do not ſeem to have been hitherto ſatisfactorily demonſtrated in the human ſtomach; and the gaſtric juice is now more generally believed to be derived from the exhalant arteries of the ſtomach.

(z) Anatomiſts have differed with reſpect to this diviſion of the inteſtines.—The method here followed is now generally adopted; but there are authors who allow the name of *cæcum* only to the little appendix, which has likewiſe been called the *vermiform appendix*, from its reſemblance to a worm in ſize and length.

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where, from its ſtraight courſe, the canal begins to take the name of *rectum*.

There are three ligamentous bands extending through the whole length of the colon, which by being ſhorter than its two inner coats, ſerve to increaſe the plaits on the inner ſurface of this gut.

The *anus*, which terminates the inteſtinum rectum, is furniſhed with three muſcles; one of theſe is compoſed of circular fibres, and from its uſe in ſhutting the paſſage of the anus is called *ſphincter ani*.

The other two are the *levatores ani*, ſo called, becauſe they elevate the anus after dejection. When theſe by palſy, or any other diſeaſe, loſe the power of contracting, the anus prolapſes; and when the ſphincter is affected by ſimilar cauſes, the fæces are voided involuntarily.

It has been already obſerved, that the inteſtinal canal is compoſed of four tunics; but it remains to be remarked, that here, as in the ſtomach, the two inner tunics being more extenſive than the other two, form the plaits which are to be ſeen in the inner ſurface of the inteſtines, and are called *valvulæ conniventes*.

Some authors have conſidered theſe plaits as tending to retard the motion of the fæces, in order to afford more time for the ſeparation of the chyle; but there are others who attribute them to a different uſe: they contend, that theſe valves, by being naturally inclined downwards, cannot impede the deſcent of the fæces, but that they are intended to prevent their return upwards.

They are probably deſtined for both theſe uſes; for although theſe folds incline to their lower ſide, yet the inequalities they occaſion in the canal are ſufficient to retard in ſome meaſure the progreſſive motion of the fæces, and to afford a greater ſurface for the abſorption of chyle; and their natural poſition ſeems to oppoſe itſelf to the return of the aliment.

Beſides theſe *valvulæ conniventes*, there is one more conſiderable than the reſt, called the *valve of the colon*; which is found at that part of the canal where the inteſtinum ileum is joined to the colon. This valve permits the alimentary pulp to paſs downwards, but ſerves to prevent its return upwards; and it is by this valve that clyſters are prevented from paſſing into the ſmall inteſtines (y).

Of the little vermiform appendix of the cæcum, it will be ſufficient to ſay, that its uſes have never yet been aſcertained. In birds we meet with two of theſe appendices.

The inteſtines are lubricated by a conſtant ſupply of mucus, which is probably ſecreted by very minute follicles (z). This mucus promotes the deſcent of the alimentary pulp, and in ſome meaſure defends the inner ſurface of the inteſtines from the irritation to which it would, perhaps, otherwiſe be continually expoſed from the aliment; and which, when in a certain degree, excites a painful diſorder called *colic*, a name given to the diſeaſe, becauſe its moſt uſual ſeat is in the inteſtinum colon.

The inteſtines are likewiſe frequently diſtended with air, and this diſtenſion ſometimes occaſions pain, and conſtitutes the flatulent colic.

The arteries of the inteſtines are continuations of the meſenteric arteries which are derived in two conſiderable branches from the aorta.—The redundant blood is carried back into the vena portarum.

In the rectum the veins are called *hæmorrhoidal*, and are there diſtinguiſhed into internal and external: the firſt are branches of the inferior meſenteric vein, but the latter paſs into other veins. Sometimes theſe veins are diſtended with blood from obſtructions, from weakneſs of their coats, or from other cauſes, and what we call the *hæmorrhoids* takes place. In this diſeaſe they are ſometimes ruptured; and the dicharge of blood which conſequently follows, has probably occaſioned them to be called *hæmorrhoidal veins*.

The nerves of the inteſtines are derived from the eighth pair.

Sect. VI. *Of the Meſentery.*

The name of the *meſentery* implies its ſituation amidſt the inteſtines. It is in fact a part of the peritonæum, being a reduplication (a) of that membrane from each ſide of the lumbar vertebræ, to which it is firmly attached, ſo that it is formed of two laminæ connected to each other by cellular membrane. 94

The inteſtines, in their different circumvolutions, form a great number of arches, and the meſentery accompanies them through all theſe turns; but by being attached

(y) This is not invariably the caſe; for the contents of a clyſter have been found not only to reach the ſmall inteſtines, but to be voided at the mouth. Such inſtances, however, are not common.

(z) Some writers have diſtinguiſhed theſe glands into miliary, lenticular, &c.—Brunner and Peyer were the firſt anatomiſts who deſcribed the glands of the inteſtines, and their deſcriptions were chiefly taken from animals, theſe glandular appearances not ſeeming to have been hitherto ſatisfactorily pointed out in the human ſubject. It is now pretty generally believed, that the mucus which everywhere lubricates the alimentary canal, is exhaled from the minute ends of arteries; and that theſe extremities firſt open into a hollow veſicle, from whence the depoſited juice of ſeveral branches flows out through one common orifice.

(a) He who only reads of the reduplication of membranes, will perhaps not eaſily underſtand how the peritonæum and pleura are reflected over the viſcera in their ſeveral cavities; for one of theſe ſerves the ſame purpoſes in the thorax that the other does in the abdomen. This diſpoſition, for the diſcovery of which we are indebted to modern anatomiſts, conſtitutes a curious part of anatomical knowledge: but the ſtudent, unaided by experience, and aſſiſted only by what the limits of this work would permit us to ſay on the occaſion, would probably imbibe only confuſed ideas of the matter; and it will perfectly anſwer the preſent purpoſe, if he conſiders the meſentery as a membrane attached by one of its ſides to the lumbar vertebræ, and by the other to the inteſtines.

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attached only to the hollow part of each arch, it is found to have only a third of the extent of the inteſtines.

That part of this membrane which accompanies the ſmall inteſtines is the *meſentery*, properly ſo called; but thoſe parts of it which are attached to the colon and rectum are diſtinguiſhed by the names of *meſo-colon* and *meſo-rectum*.

There are many conglobate glands diſperſed through this double membrane, through which the lacteals and lymphatics paſs in their way to the thoracic duct. The blood-veſſels of the meſentery were deſcribed in ſpeaking of the inteſtines.

This membrane, by its attachment to the vertebræ, ſerves to keep the inteſtines in their natural ſituation. The idea uſually formed of the colic called *miſerere*, is perfectly erroneous; it being impoſſible that the inteſtines can be twiſted, as many ſuppoſe they are, in that diſeaſe, their attachment to the meſentery effectually preventing ſuch an accident—but a diſarrangement ſometimes takes place in the inteſtinal canal itſelf, which is productive of diſagreeable and ſometimes fatal conſequences.—This is by an introſuſception of the inteſtine, an idea of which may be eaſily formed, by taking the finger of a glove, and involving one part of it within the other.

If inflammation takes place, the ſtricture in this caſe is increaſed, and the periſtaltic motion of the inteſtines (by which is meant the progreſſive motion of the faeces downwards) is inverted, and what is called the *iliac paſſion* takes place. The ſame effects may be occaſioned by a deſcent of the inteſtine, or of the omentum either with it or by itſelf, and thus conſtituting what is called a *hernia* or *rupture*; a term by which in general is meant the falling down or protruſion of any part of the inteſtine or omentum, which ought naturally to be contained within the cavity of the belly.

To convey an idea of the manner in which ſuch a deſcent takes place, it will be neceſſary to obſerve, that the lower edge of the tendon of the muſculus obliquus externus, is ſtretched from the fore part of the os ilium or haunch bone to the os pubis, and conſtitutes what is called *Poupart's* or *Fallopius's ligament*, forming an opening, through which paſs the great crural artery and vein. Near the os pubis the ſame tendinous fibres are ſeparated from each other, and form an opening on each ſide, called the *abdominal ring*, through which the ſpermatic veſſels paſs in men, and the ligamenta uteri in women. In conſequence of violent efforts, or perhaps of natural cauſes, the inteſtines are found ſometimes to paſs through theſe openings; but the peritonæum which encloſes them when in their natural cavity, ſtill continues to ſurround them even in their deſcent. This membrane does not become torn or lacerated by the violence, as might be eaſily imagined; but its dilatability enables it to paſs out with the viſcus, which it encloſes as it were in a bag, and thus forms what is called the *hernial ſac*.

If the hernia be under Poupart's ligament, it is called *femoral*; if in the groin *inguinal* (B); and *ſcrotal*, if in the ſcrotum. Different names are likewiſe given to the hernia as the contents of the ſac differ, whether of omentum only, or inteſtine, or both;—but theſe definitions more properly belong to the province of ſurgery.

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Sect. VII. *Of the Pancreas.*

95 The pancreas is a conglomerate gland, placed behind the bottom of the ſtomach, towards the firſt vertebra of the loins; ſhaped like a dog's tongue, with its point ſtretched out towards the ſpleen, and its other end extending towards the duodenum. It is about eight fingers breadth in length, two or three in width, and one in thickneſs.

This viſcus, which is of a yellowiſh colour, ſomewhat inclining to red, is covered with a membrane which it derives from the peritonæum. Its arteries, which are rather numerous than large, are derived chiefly from the ſplenic and hepatic, and its veins paſs into the veins of the ſame name.—Its nerves are derived from the intercoſtal.

The many little glands of which it has been obſerved the pancreas is compoſed, all ſerve to ſecrete a liquor called the *pancreatic juice*, which, in its colour, conſiſtence, and other properties, does not ſeem to differ from the ſaliva. Each of theſe glands ſends out a little excretory duct, which uniting with others, help to form larger ducts; and all theſe at laſt terminate in one common excretory duct (firſt diſcovered by Virtſungus in 1642), which runs through the middle of the gland, and is now uſually called *ductus pancreaticus Virſungi*. This canal opens into the inteſtinum duodenum, ſometimes by the ſame orifice with the biliary duct, and ſometimes by a diſtinct opening. The liquor it diſcharges being of a mild and inſipid nature, ſerves to dilute the alimentary pulp, and to incorporate it more eaſily with the bile.

Sect. VIII. *Of the Liver.*

96 The liver is a viſcus of conſiderable ſize, and of a reddiſh colour; convex ſuperiorly and anteriorly where it is placed under the ribs and diaphragm, and of an unequal ſurface poſteriorly. It is chiefly ſituated in the right hypochondrium, and under the falſe ribs; but it likewiſe extends into the epigaſtric region, where it borders upon the ſtomach. It is covered by a production of the peritonæum, which ſerves to attach it by three of its reduplications to the falſe ribs. Theſe reduplications are called *ligaments*, though very different in their texture from what are called by the ſame name in other parts of the body. The umbilical cord, too, which in the fœtus is pervious, gradually becomes a ſimple ligament after birth; and by paſſing to the liver, ſerves likewiſe to ſecure it in its ſituation.

At the poſteror part of this organ where the umbilical veſſels enter, it is found divided into two lobes. Of theſe, the largeſt is placed in the right hypochondrium; the other, which covers part of the ſtomach, is called the *little lobe*. All the veſſels which go to the liver paſs in at the fiſſure we have mentioned; and the production of the peritonæum, which inveſts the liver, was deſcribed by Gliſſon, an Engliſh anatomiſt, as accompanying them in their paſſage, and ſurrounding

(B) The hernia congenita will be conſidered with the male organs of generation, with which it is intimately connected.

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surrounding them like a glove; hence this production has been commonly known by the name of *capsula of Glisson*: but it appears to be chiefly a continuation of the cellular membrane which covers the vena portæ ventralis.

The liver was considered by the ancients as an organ destined to prepare and perfect the blood; but later discoveries have proved, that this opinion was wrong, and that the liver is a glandular substance formed for the secretion of the bile.

The blood is conveyed to the liver by the hepatic artery and the vena portæ. This is contrary to the mode of circulation in other parts, where veins only serve to carry off the redundant blood: but in this viscus the hepatic artery, which is derived from the cæliac, is principally destined for its nourishment; and the vena portæ, which is formed by the union of the veins from most of the abdominal viscera, furnishes the blood from which the bile is chiefly to be separated: so that these two series of vessels serve very distinct purposes. The vena portæ, as it is ramified through the liver, performs the office both of a vein and an artery; for like the former it returns the blood from the extremities of arteries, while as the latter it prepares it for secretion.

The nerves of the liver are branches of the intercostal and par vagum. The bile, after being separated from the mass of blood, in a manner of which mention will be made in another place, is conveyed out of this organ by very minute excretory ducts, called *pori biliarii*; these uniting together like the excretory ducts in the pancreas, gradually form larger ones, which at length terminate in a considerable channel called *ductus hepaticus*.

Sect. IX. *Of the Gall-Bladder.*

97 The gall-bladder is a little membranous bag, shaped like a pear, and attached to the posterior and almost inferior part of the great lobe of the liver.

It has two tunics; of which the exterior one is a production of the peritonæum. The interior, or villous coat, is supplied with a mucus that defends it from the acrimony of the bile. These two coverings are intimately connected by means of cellular membrane, which from its firm glistening appearance has generally been spoken of as a muscular tunic.

The gall-bladder is supplied with blood-vessels from the hepatic arteries. These branches are called the *cystic arteries*, and the cystic veins carry back the blood.

Its nerves are derived from the same origin as those of the liver.

The neck of the gall-bladder is continued in the form of a canal called *ductus cysticus*, which soon unites with the ductus hepaticus we described as the excretory duct of the liver; and forming one common canal, takes the name of *ductus choledochus communis*, through which both the cystic and hepatic bile are discharged into the duodenum. This canal opens into the intestine in an oblique direction, first passing through the exterior tunic, and then piercing the other coats after running between each of them a very little way. This economy serves two useful purposes;—to promote the discharge of bile, and to prevent its return.

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98 Of the Bile.

The bile may be defined to be a natural liquid soap, somewhat unctuous and bitter, and of a yellowish colour, which easily mixes with water, oil, and vinous spirits, and is capable of dissolving resinous substances. From some late experiments made by M. Cadet*, it appears to be formed of an animal oil, combined with the alkaline base of sea salt, a salt of the nature of milk, and a calcareous earth which is slightly ferruginous.

* *Mem. de l'Acad. des Sciences*, 1767.

Its definition seems sufficiently to point out the uses for which it is intended (c). It blends the alimentary mass, by dividing and attenuating it; corrects the too great disposition to acescency, which the aliment acquires in the stomach; and, finally, by its acrimony, tends to excite the peristaltic motion of the intestines.

After what has been said, it will be conceived that there are two sorts of bile; one of which is derived immediately from the liver through the hepatic duct, and the other from the gall-bladder. These two biles, however, do not essentially differ from each other. The hepatic bile indeed is milder, and more liquid than the cystic, which is constantly thicker and yellower; and by being bitterer, seems to possess greater activity than the other.

Every body knows the source of the hepatic bile, that it is secreted from the mass of blood by the liver; but the origin of the cystic bile has occasioned no little controversy amongst anatomical writers. There are some who contend, that it is separated in the substance of the liver, from whence it passes into the gall-bladder through particular vessels. In deer, and in some other quadrupeds, as well as in several birds and fishes, there is an evident communication, by means of particular vessels, between the liver and the gall-bladder. Bianchi, Winslow, and others, have asserted the existence of such vessels in the human subject, and named them *hepaticycystic ducts*; but it is certain that no such ducts exist.—In obstructions of the cystic duct, the gall-bladder has been found shrivelled and empty: so that we may consider the gall-bladder as a reservoir of hepatic bile; and that it is an established fact, that the whole of the bile contained in the gall-bladder is derived from the liver; that it passes from the hepatic or the cystic duct, and from that to the gall-bladder. The difference in the colour, consistence, and taste of the bile, is merely the consequence of stagnation and absorption. When the stomach is distended with aliment, this reservoir undergoes a certain degree of compression, and the bile passes out into the intestinal canal; and in the efforts to vomit, the gall-bladder seems to be constantly affected, and at such times discharges itself of its contents.

Sometimes

(c) The ancients, who were not acquainted with the real use of the liver, considered the bile as an excrementitious and useless fluid.

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Sometimes the bile concretes in the gall-bladder, ſo as to form what are called *gall ſtones* (D). When theſe concretions paſs into the cyſtic duct, they ſometimes occaſion exquiſite pain, by diſtending the canal in their way to the duodenum; and by lodging in the ductus choledochus communis, and obſtructing the courſe of the bile, this fluid will be abſorbed, and by being carried back into the circulation occaſion a temporary jaundice.

Sect. X. *Of the Spleen.*

99 The ſpleen is a ſoft and ſpongy viſcus, of a bluiſh colour, and about five or ſix fingers breadth in length, and three in width, ſituated in the left hypochondrium, between the ſtomach and the falſe ribs. That ſide of it which is placed on the ſide of the ribs is convex; and the other, which is turned towards the ſtomach, is concave.

The ſplenic artery, which is a branch from the cæliac, ſupplies this viſcus with blood, and a vein of the ſame name carries it back into the vena portæ.

Its nerves are derived from a particular plexus called the *ſplenic*, which is formed by branches of the intercoſtal nerve, and by the eighth pair, or par vagum.

The ancients, who ſuppoſed two ſorts of bile, conſidered the ſpleen as the receptacle of what they called *atra bilis*. Havers, who wrote profeſſedly on the bones, determined its uſe to be that of ſecreting the ſynovia; and the late Mr Hewſon imagined, that it concurred with the thymus and lymphatic glands of the body in forming the red globules of the blood. All theſe opinions ſeem to be equally fanciful. The want of an excretory duct has occaſioned the real uſe of this viſcus to be ſtill doubtful. Perhaps the blood undergoes ſome change in it, which may aſſiſt in the preparation of the bile. This is the opinion of the generality of modern phyſiologiſts; and the great quantity of blood with which it is ſupplied, together with the courſe of its veins into the vena portæ, ſeem to render this notion probable.

Sect. XI. *Of the Glandulæ Renales, Kidneys, and Ureters.*

100 The glandulæ renales, which were by the ancients ſuppoſed to ſecrete the atra bilis, and by them named *capſulæ atrabiliares*, are two flat bodies of an irregular figure, one on each ſide between the kidney and the aorta.

In the fœtus they are as large as the kidneys: but they do not increaſe afterwards in proportion to thoſe parts; and in adults and old people they are generally found ſhrivelled, and much waſted. They have their arteries and veins. Their arteries uſually ariſe from the ſplenic or the emulgent, and ſometimes from the aorta; and their veins go to the neighbouring vein, or to the vena cava. Their nerves are branches of the intercoſtal.

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The uſe of theſe parts is not yet perfectly known. In the fœtus the ſecretion of urine muſt be in a very ſmall quantity, and a part of the blood may perhaps then paſs through theſe channels, which in the adult is carried to the kidneys to ſupply the matter of urine.

101 Kidneys.

The kidneys are two in number, ſituated one on the right and the other on the left ſide in the lumbar region, between the laſt falſe rib and the os ilium, by the ſides of the vertebræ. Each kidney in its figure reſembles a ſort of bean, which from its ſhape is called *kidney bean*. The concave part of each kidney is turned towards the aorta and vena cava aſcendens. They are ſurrounded by a good deal of fat, and receive a coat from the peritonæum; and when this is removed, a very fine membrane is found inveſting their ſubſtance and the veſſels which ramify through them.

Each kidney has a conſiderable artery and vein, which are called the *emulgent*. The artery is a branch from the aorta, and the vein paſſes into the vena cava. Their nerves, which everywhere accompany the blood veſſels, ariſe from a conſiderable plexus, which is derived from the intercoſtal.

In each kidney, which in the adult is of a pretty firm texture, there are three ſubſtances to be diſtinguiſhed (E). The outer part is glandular or cortical, beyond this is the vaſcular or tubular ſubſtance, and the inner part is papillary or membranous.

It is in the cortical part of the kidney that the ſecretion is carried on; the urine being there received from the minute extremities of the capillary arteries, is conveyed out of this cortical ſubſtance by an infinite number of very ſmall cylindrical canals or excretory veſſels, which conſtitute the tubular part. Theſe tubes, as they approach the inner ſubſtance of the kidney, gradually unite together; and thus forming larger canals, at length terminate in ten or twelve little protuberances called *papillæ*, the orifices of which may be ſeen without the aſſiſtance of glaſſes. Theſe papillæ open into a ſmall cavity or reſervoir called the *pelvis of the kidney*, and formed by a diſtinct membranous bag which embraces the papillæ. From this pelvis the urine is conveyed through a membranous canal which paſſes out from the hollow ſide of the kidney, a little below the blood-veſſels, and is called *ureter*.

102 Ureters.

The ureters are each about as large as a common writing pen. They are ſomewhat curved in their courſe from the kidneys, like the letter *ſ*, and at length terminate in the poſterior and almoſt inferior part of the bladder, at ſome diſtance from each other. They paſs into the bladder in the ſame manner as the ductus choledochus communis paſſes into the inteſtinum duodenum, not by a direct paſſage, but by an oblique courſe

(D) Theſe concretions ſometimes remain in the gall-bladder without cauſing any uneaſineſs. Dr Heberden relates, that a gall ſtone weighing two drachms was found in the gall-bladder of Lord Bath, though he had never complained of the jaundice, or of any diſorder which he could attribute to that cauſe. *Med. Trans.* vol. ii.

(E) The kidneys in the fœtus are diſtinctly lobulated; but in the adult they become perfectly firm, ſmooth, and regular.

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course between the two coats: so that the discharge of urine into the bladder is promoted, whilst its return is prevented. Nor does this mode of structure prevent the passage of fluids only from the bladder into the ureters, but likewise air:—for air thrown into the bladder inflates it, and it continues to be distended if a ligature is passed round its neck; which seems to prove sufficiently that it cannot pass into the ureters.

Sect. XII. *Of the Urinary Bladder.*

103 The urinary bladder is a membranous and muscular bag of an oblong roundish shape, situated in the pelvis, between the os pubis and intestinum rectum in men, and between the os pubis and uterus in women. Its upper and widest part is usually called the *bottom*, its narrower part the *neck* of the bladder; the former only is covered by the peritonæum.

The bladder is formed of three coats, connected together by means of cellular membrane. The external or peritonæal, is only a partial one, covering the upper and back part of the bladder. The middle, or muscular coat, is composed of irritable, and of course muscular fibres, which are most collected around the neck of the bladder, but not so as to form a distinct muscle, or sphincter, as the generality of anatomists have hitherto supposed.

The inner coat, though much smoother, has been said to resemble the villous tunic of the intestines, and like that is provided with a mucus, which defends it against the acrimony of the urine.

104 Of the urine.

It will be easily conceived from what has been said, that the kidneys are two glandular bodies, through which a saline and excrementitious fluid called *urine* is constantly filtering from the mass of blood.

While only a small quantity of urine is collected in the bladder, it excites no kind of uneasiness: but when a greater quantity is accumulated, so that the bladder is distended in a certain degree, it excites in us a certain sensation, which brings on as it were a voluntary contraction of the bladder to promote its discharge.—But this contraction is not effected by the muscular fibres of the bladder alone: for all the abdominal muscles contract in obedience to our will, and press downwards all the viscera of the lower belly; and these powers being united, at length overcome the resistance of the fibres surrounding the neck of the bladder, which dilates and affords a passage to the urine through the urethra.

The frequency of this evacuation depends on the quantity of urine secreted; on the degree of acrimony it possesses; on the size of the bladder, and on its degree of sensibility.

The urine varies much in its colour and contents. These varieties depend on age, sex, climate, diet, and other circumstances. In infants it is generally a clear watery fluid, without smell or taste. As we advance in life, it acquires more colour and smell, and becomes more impregnated with salts. In old people it becomes still more acrid and fetid.

In a healthy state it is nearly of a straw colour.—After being kept for some time, it deposites a tartarous matter, which is found to be composed chiefly of earth and salt, and soon incrusts the sides of the vessel in which it is contained. While this separation is taking place, appearances like minute fibres or threads of a whitish colour, may be seen in the middle of the urine, and an oily scum observed floating on its surface. So that the most common appearances of the urine are sufficient to ascertain that it is a watery substance, impregnated with earthy, saline, and oily particles.

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The urine is not always voided of the same colour and consistence; for these are found to depend on the porportion of its watery part to that of its other constituent principles.—Its colour and degree of fluidity seem to depend on the quantity of saline and inflammable particles contained in it: so that an increased proportion of those parts will constantly give the urine a higher colour, and add to the quantity of sediment.

The variety in the appearances of the urine, depends on the nature and quantity of solid and fluid aliment we take in; and it is likewise occasioned by the different state of the urinary vessels, by which we mean the channels through which it is separated from the blood, and conveyed through the pelvis into the ureters. The causes of calculous concretion in the urinary passages, are to be looked for in the natural constitution of the body, mode of life, &c.

It having been observed, that after drinking any light wine or Spa water, it very soon passed off by urine, it has been supposed by some, that the urine is not altogether conveyed to the bladder by the ordinary course of circulation, but that there must certainly exist some other shorter means of communication, perhaps by certain vessels between the stomach and the bladder, or by a retrograde motion in the lymphatics. But it is certain, that if we open the belly of a dog, press out the urine from the bladder, pass a ligature round the emulgent arteries, and then sew up the abdomen, and give him even the most diuretic liquor to drink, the stomach and other channels will be distended with it, but not a drop of urine will be found to have passed into the bladder; or the same thing happens when a ligature is thrown round the two ureters. This experiment then seems to be a sufficient proof, that all the urine we evacuate is conveyed to the kidneys through the emulgent arteries, in the manner we have described.—It is true, that wine and other liquors promote a speedy evacuation of urine: but the discharge seems to be merely the effect of the stimulus they occasion; by which the bladder and urinary parts are solicited to a more copious discharge of the urine, which was before in the body, and not immediately of that which was last drank; and this increased discharge, if the supply is kept up, will continue: nor will this appear wonderful, if we consider the great capacity of the vessels that go to the kidneys; the constant supply of fresh blood that is essential to health; and the rapidity with which it is incessantly circulated through the heart to all parts of the body.

Sect. XIII. *Of Digestion.*

105 We are now proceeding to speak of *digestion*, which seems to be introduced in this place with propriety, after a description of the abdominal viscera, the greater part of which contribute to this function. By *digestion* is to be understood, the changes the aliment undergoes

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dergoes for the formation of chyle:—theſe changes are effected in the mouth, ſtomach, and ſmall inteſtines.

The mouth, of which every body has a general knowledge, is the cavity between the two jaws, formed anteriorly and laterally by the lips, teeth, and cheeks, and terminating poſteriorly in the throat.

The lips and cheeks are made up of fat and muſcles, covered by the cuticle, which is continued over the whole inner ſurface of the mouth, like a fine and delicate membrane.—Beſides this membrane, the inſide of the mouth is furniſhed with a ſpongy and very vaſcular ſubſtance called the *gums*, by means of which the teeth are ſecured in their ſockets. A ſimilar ſubſtance covers the roof of the mouth, and forms what is called the *velum pendulum palati*, which is fixed to the extremity of the arch formed by the oſſa maxillaria and oſſa palati, and terminates in a ſoft, ſmall, and conical body, named *uvula*; which appears, as it were, ſuſpended from the middle of the arch over the baſis of the tongue.

The velum pendulum palati performs the office of a valve between the cavity of the mouth and the pharynx, being moved by ſeveral muſcles (F).

The tongue is compoſed of ſeveral muſcles (G) which enable it to perform a variety of motions for the articulation of the voice; for the purpoſes of maſtication; and for conveying the aliment into the pharynx. Its upper part is covered with papillæ, which conſtitute the organ of taſte, and are eaſily to be diſtinguiſhed; it is covered by the ſame membrane that lines the inſide of the mouth, and which makes at its inferior part towards its baſis a reduplication called *frænum*.

Poſteriorly, under the velum palati, and at the baſis of the tongue, is the pharynx; which is the beginning of the œſophagus, ſtretched out every way, ſo as to reſemble the top of a funnel, through which the aliment paſſes into the ſtomach.

The mouth has a communication with the noſtrils at its poſterior and upper part; with the ears, by the Euſtachian tubes; with the lungs, by means of the larynx; and with the ſtomach, by means of the œſophagus.

The pharynx is conſtantly moiſtened by a fluid, ſecreted by two conſiderable glands called the *tonſils*, one on each ſide of the velum palati. Theſe glands, from their ſuppoſed reſemblance to almonds, have likewiſe been called *amygdalus*.

The mouth is moiſtened by a conſiderable quantity of ſaliva. This fluid is derived from the *parotid glands*; a name which by its etymology points out their ſituation to be near the ears. They are two in number, one on each ſide under the os malæ: and they are of the conglomerate kind; being formed of many ſmaller glands, each of which ſends out a very ſmall excretory duct, which unites with the reſt, to form one common channel, that runs over the cheek, and piercing the buccinator muſcle, opens into the mouth on each ſide, by an orifice into which a briſtle may be eaſily introduced.

—Beſides theſe, the maxillary glands, which lie [illegible] near the inner ſurface of the angle of the lower jaw on each ſide; the ſublingual gland, which are ſituated at the root of the tongue; the glands of the palate, which are ſeated in the velum palati; and thoſe of the cheeks, lips, &c. together with many other leſs conſiderable ones,—pour the ſaliva into the mouth though their ſeveral excretory ducts.

The ſaliva, like all the other humours of the body, is found to be different in different people; but in general, it is a limpid and inſipid fluid, without ſmell in healthy ſubjects; and theſe properties would ſeem to prove, that it contains very few ſaline or inflammable particles.

The uſes of the ſaliva ſeem to be to moiſten and lubricate the mouth, and to aſſiſt in reducing the aliment into a ſoft pulp before it is conveyed into the ſtomach.

136 Of hunger and thirſt.

The variety of functions which are conſtantly performed by the living body, muſt neceſſarily occaſion a continual waſte and diſſipation of its ſeveral parts. A great quantity is every day thrown off by the inſenſible perſpiration and other diſcharges; and were not theſe loſſes conſtantly recruited by a freſh ſupply of chyle, the body would ſoon effect its own diſſolution. But nature has very wiſely favoured us with organs fitted to produce ſuch a ſupply; and has at the ſame time endued us with the ſenſations of hunger and thirſt, that our attention may not be diverted from the neceſſary buſineſs of nutrition. The ſenſation of hunger is univerſally known; but it would perhaps be difficult to deſcribe it perfectly in words. It may, however, be defined to be a certain uneaſy ſenſation in the ſtomach, which induces us to wiſh for ſolid food; and which likewiſe ſerves to point out the proper quantity, and time for taking it. In deſcribing the ſtomach, mention was made of the gaſtric juice, as everywhere lubricating its inner coat. This humour mixes itſelf with the aliment in the ſtomach, and helps to prepare it for its paſſage into the inteſtines; but when the ſtomach is perfectly empty, this ſame fluid irritates the coats of the ſtomach itſelf, and produces the ſenſation of hunger.

A certain proportion of liquid aliment is required to aſſiſt in the proceſs of digeſtion, and to afford that moiſture to the body, of which there is ſuch a conſtant diſſipation. Thirſt induces us to take this neceſſary ſupply of drink; and the ſeat of this ſenſation is in the tongue, fauces, and œſophagus, which from their great ſenſibility are required to be kept moiſt: for though the fauces are naturally moiſtened by the mucus and ſalival juices; yet the blood, when deprived of its watery part, or rendered acrimonious by any natural cauſes, never fails particularly to affect theſe parts, and the whole alimentary canal, and to occaſion thirſt.—This is the common effect of fevers and of hard labour, by both which too much of the watery part of the blood is diſſipated.

It has been obſerved, that the aliment undergoes

(F) Theſe are the circumflexus palati, levator palati mollis, palato-pharyngæus, conſtrictor iſthmi faucium, and azygos uvulæ.

(G) Theſe are, the genio-gloſſus, hyo-gloſſus, lingualis, and ſtylo-gloſſus.

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127 Of maſtication and deglutition.

ſome preparation in the mouth before it paſſes into the ſtomach; and this preparation is the effect of maſtication. In treating of the upper and lower jaws, mention was made of the number and arrangement of the teeth. The upper jaw was deſcribed as being immoveable; but the lower jaw was ſpoken of as being capable of elevation and depreſſion, and of a grinding motion. The aliment, when firſt carried into the mouth, is preſſed between the teeth of the two jaws, by a very ſtrong and frequent motion of the lower jaw; and the tongue and the cheeks aſſiſting in this proceſs, continue to replace the food between the teeth till it is perfectly divided, and reduced to the conſiſtence of pulp. The inciſores and canini divide it firſt into ſmaller pieces, but it is between the ſurfaces of the dentes molares by the grinding motion of the jaw that the maſtication is completed.

During this proceſs, the ſalival glands being gently compreſſed by the contraction of the muſcles that move the lower jaw, pour out their ſaliva: this helps to divide and break down the food, which at length becomes a kind of pulp, and is then carried over the baſis of the tongue into the fauces. But to effect this paſſage into the œſophagus, it is neceſſary that the other openings which were mentioned, as having a communication with the mouth as well as the pharynx, ſhould be cloſed; that none of the aliment, whether ſolid or liquid, may paſs into them, whilſt the pharynx alone is dilated to receive it:—And ſuch a diſpoſition actually takes place in a manner we will endeavour to deſcribe.

The trachea arteria, or windpipe, through which the air is conveyed to the lungs, is placed before the œſophagus: in the act of ſwallowing, therefore, if the *larynx* (for ſo the upper part of the trachea is called) is not cloſed, the aliment will paſs into it in its way to the œſophagus. But this is prevented by a ſmall and very elaſtic cartilage, called *epiglottis*, which is attached only to the fore part of the larynx; ſo that the food in its paſſage to the œſophagus preſſes down this cartilage, which then covers the glottis or opening of the larynx; and at the ſame time the velum palati being capable of ſome degree of motion, is drawn backwards by its muſcles, and cloſes the openings into the noſe and the Euſtachian tubes.—This, however, is not all. The larynx, which being compoſed of cartilaginous rings cannot fail in its ordinary ſtate to compreſs the membranous canal of the œſophagus, is in the act of deglutition carried forwards and upwards by muſcles deſtined for that purpoſe; and conſequently drawing the fore part of the pharynx with it, that opening is fully dilated. When the aliment has reached the pharynx, its deſcent is promoted by its own proper weight, and by the muſcular fibres of the œſophagus, which continue to contract from above downwards, until the aliment has reached the ſtomach. That theſe fibres have no inconſiderable ſhare in deglutition, any perſon may experience, by ſwallowing with his head downwards, when the deſcent of the aliment cannot poſſibly be effected by its weight.

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It is neceſſary that the noſtrils and the lungs ſhould communicate with the mouth, for the purpoſes of ſpeech and reſpiration; but if the moſt minute part of our food happens to be introduced into the trachea, it never fails to produce a violent cough, and ſometimes the moſt alarming ſymptoms. This is liable to happen when we laugh or ſpeak in the act of deglutition; the food is then ſaid to have paſſed the wrong way. And indeed this is not improperly expreſſed: for death would ſoon follow, if the quantity of aliment introduced into the trachea ſhould be ſufficient to obſtruct the reſpiration only during a very ſhort time; or if the irritating particles of food ſhould not ſoon be thrown up again by means of the cough, which in theſe caſes very ſeaſonably increaſes in proportion to the degree of irritation.

If the velum palati did not cloſe the paſſage to the noſtrils, deglutition would be performed with difficulty, and perhaps not at all; for the aliment would return through the noſe, as is ſometimes the caſe in drinking. Children, from a deficiency in this velum palati, have been ſeen to die a few hours after birth; and they who from diſeaſe or any other cauſes have not this part perfect, ſwallow with difficulty.

The aliment, after having been ſufficiently divided by the action of the teeth, and attenuated by the ſaliva, is received into the ſtomach, where it is deſtined to undergo a more conſiderable change.

The properties of the aliment not being much altered at its firſt entrance into the ſtomach, and before it is thoroughly blended with the gaſtric juice, it is capable of irritating the inner coat of the ſtomach to a certain degree, and occaſions a contraction of its two orifices.—In this membranous bag, ſurrounded by the abdominal viſcera, and with a certain degree of natural heat, the aliment undergoes a conſtant agitation by means of the abdominal muſcles and of the diaphragm, and likewiſe by a certain contraction or expanſion of the muſcular fibres of the ſtomach itſelf. By this motion, every part of the food is expoſed to the action of the gaſtric juice, which gradually divides and attenuates it, and prepares it for its paſſage into the inteſtines.

Some obſervations lately publiſhed by Mr Hunter, in the Philoſophical Tranſactions, tend to throw conſiderable light on the principles of digeſtion. There are few dead bodies in which the ſtomach, at its great end, is not found to be in ſome degree digeſted (H). Animals, or parts of animals, poſſeſſed of the living principle,

(H) The Abbé Spallanzani, who has written upon digeſtion, found, from a variety of experiments made upon quadrupeds, birds, and fiſhes, that digeſtion goes on for ſome time after death, though far leſs conſiderable than in living animals: but heat is neceſſary in many animals, or at leaſt promotes it in a much greater degree. He found alſo, that when the ſtomach was cut out of the body, it had ſomewhat of the power of digeſtion, though this was trifling when compared with that which took place when the ſtomach was left in the body. In not one of the animals was the great curvature of the ſtomach diſſolved, or much eroded after death. There was often a little eroſion, eſpecially in different fiſhes; in which, when he had cleared the ſtomach of its contents, the internal coat was wanting. In other animals there was only a ſlight excoriation: and the injury

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principle, when taken into the ſtomach, are not in the leaſt affected by the action of that viſcus; but the moment they loſe the living principle, they become ſubject to its digeſtive powers. This ſeems to be the caſe with the ſtomach, which is enabled to reſiſt the action of its juices in the living body: but when deprived of the living principle, it is then no longer able to reſiſt the powers of that menſtruum, which it had itſelf formed for the digeſtion of its contents; the proceſs of digeſtion appearing to be continued after death. This is confirmed by what happens in the ſtomachs of fiſhes. They frequently ſwallow, without maſtication, fiſh which are larger than the digeſting parts of their ſtomach can contain; and in ſuch caſes, that part which is taken into the ſtomach, is more or leſs diſſolved, while that part which remains in the œſophagus is perfectly ſound; and here, as well as in the human body, the digeſting part of the ſtomach is often reduced to the ſame ſtate as the digeſted part of the food. Theſe appearances tend to prove, that digeſtion is not effected by a mechanical power, by contractions of the ſtomach, or by heat; but by a fluid ſecreted in the coats of the ſtomach, which is poured into its cavity, and there animalizes the food, or aſſimilates it to the nature of blood.

* *Hiſt. de l'Academie Royale des Sciences, &c. pour* 1784. *mem.* 15.

From ſome late experiments by M. Sage *, it appears, that inflammable air has the property of deſtroying and diſſolving the animal texture: And as we ſwallow with the ſubſtances which ſerve us for food a great quantity of atmoſpherical air, M. Sage thinks it poſſible, that dephlogiſticated, which is its principle, may be converted in the ſtomach into inflammable air, or may modify into inflammable air a portion of the oily ſubſtance which is the principle of aliments. In this caſe, would not the inflammable air (he aſks), by diſſolving our food, facilitate its converſion into chyle?

Be this as it may, the food, after having remained one, two, or three hours in the ſtomach, is converted into a grayiſh pulp, which is uſually called *chymus*, a word of Greek etymology, ſignifying *juice*, and ſome few milky or chylous particles begin to appear.—But the term of its reſidence in this bag is proportioned to the nature of the aliment, and to the ſtate of the ſtomach and its juices. The thinner and more perfectly digeſted parts of the food paſs by a little at a time into the duodenum, through the pylorus, the fibres of which relax to afford it a paſſage; and the groſſer and leſs digeſted particles remain in the ſtomach, till they acquire a ſufficient fluidity to paſs into the inteſtines, where the nature of the chymus is perfectly changed. The bile and pancreatic juice which flow into the duodenum, and the mucus, which is everywhere diſtilled from the ſurface of the inteſtines, mix themſelves with the alimentary pulp, which they ſtill farther attenuate and diſſolve, and into which they ſeem to infuſe new properties.

Two matters very different from each other in their nature and deſtination, are the reſult of this combination.—One of theſe, which is compoſed of the liquid parts of the aliment, and of ſome of its more ſolid particles, extremely divided and mixed with the juices we have deſcribed, conſtitutes a very mild, ſweet, and whitiſh fluid reſembling milk, and diſtinguiſhed by the name of *chyle*. This fluid is abſorbed by the lacteal veins, which convey it into the circulation, where, by being aſſimilated into the nature of blood, it affords the ſupply of nutrition, which the continual waſte of that body is found to require.—The other is the remains of the alimentary maſs deprived of all its nutritious particles, and containing only ſuch parts as were rejected by the abſorbing mouths of the lacteals. This groſſer part, called the *feces*, paſſes on through the coats of the inteſtines, to be voided at the anus, as will be explained hereafter; for this proceſs in the economy cannot be well underſtood till the motion of reſpiration has been explained. But the ſtructure of the inteſtines is a ſubject which may be properly deſcribed in this place, and deſerves to be attended to.

Of the Alimentary Canal.

It has been already obſerved, that the inteſtinal canal is five or ſix times as long as the body, and that it forms many circumvolutions in the cavity of the abdomen, which it traverſes from the right to the left, and again from the left to the right; in one place deſcending, and in another extending itſelf upwards. It was noticed likewiſe, that the inner coat of the inteſtines, by being more capacious than their exterior tunics, formed a multitude of plaits placed at a certain diſtance from each other, and called *valvulæ conniventes*. Now this diſpoſition will be found to afford a farther proof of that divine wiſdom, which the anatomiſt and phyſiologiſt cannot fail to diſcover in all their purſuits. —For if the inteſtinal canal was much ſhorter than it naturally is; if inſtead of the preſent circumvolution, it paſſed in a direct courſe from the ſtomach; and if its inner ſurface was ſmooth and deſtitute of valves; the aliment would conſequently paſs with great rapidity to the anus, and ſufficient time would be wanting to aſſimilate the chyle, and for the neceſſary abſorption of it into the lacteals; ſo that the body would be deprived of the ſupply of nutrition, which is ſo eſſential to life and health; but the length and circumvolutions of the inteſtines, the inequality of their internal ſurface, and the courſe of the aliment through them, all concur to perfect the ſeparation of the chyle from the fæces, and to afford the neceſſary nouriſhment to the body.

Sect. XIV. *Of the Courſe of the Chyle, and of the Lymphatic Syſtem.*

An infinite number of very minute veſſels, called the *lacteal veins*, ariſe like net-work from the inner ſurface of the inteſtines (but principally from the *jejunum* and *ileum*), which are deſtined to imbibe the nutritious fluid or chyle. Theſe veſſels, which were diſcovered by Aſellius in 1622 (1), paſs obliquely through the coats

jury in all of them was at the inferior part, or great curvature. The coats of the ſtomach ſuffer leſs after death than fleſh, or part of the ſtomach of ſimilar animals put into it: The author aſſigns as a reaſon for this, that theſe bodies are inveſted on all ſides by the gaſtric fluid, whereas it only acts on the internal ſurface of the ſtomach.

(1) We are informed by Galen, that the lacteals had been ſeen in kids by Eraſiſtratus, who conſidered them

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of the inteſtine, and running along the meſentery, unite as they advance, and form larger branches, all of which paſs through the meſenteric or conglobate glands, which are very numerous in the human ſubject. As they run between the inteſtines and theſe glands, they are ſtyled *venæ lacteæ primi generis*: but after leaving theſe glands they are found to be leſs numerous, and being increaſed in ſize, are then called *venæ lacteæ ſecundi generis*, which go to depoſite their contents in the *thoracic duct*, through which the chyle is conveyed into the blood.

The *thoracic duct* begins about the lower part of the firſt vertebra lumborum, from whence it paſſes up by the ſide of the aorta, between that and the vena azygos, cloſe to the vertebræ, being covered by the pleura. Sometimes it is found divided into two branches; but they uſually unite again into one canal, which opens into the left ſubclavian vein, after having run a little way in an oblique courſe between its coats. The ſubclavian vein communicates with the vena cava, which paſſes to the right auricle of the heart.

The lower part of this duct being uſually larger than any other part of it, has been named *receptaculum chyli*, or *Pecquet's receptacle*, in honour of the anatomiſt who firſt diſcovered it in 1651. In ſome quadrupeds, in turtle and in fiſh, this enlargement * is more conſiderable, in proportion to the ſize of the duct, than it uſually is in the human ſubject, where it is not commonly found large enough to merit the name of *receptaculum*.

* *Hewſon's Exp. Inq.* Part II.

Opportunities of obſerving the lacteals in the human ſubject do not often occur; but they may be eaſily demonſtrated in a dog or any other quadruped that is killed two or three hours after feeding upon milk, for then they appear filled with white chyle.

But theſe *lacteals*, which we have deſcribed as paſſing from the inteſtines through the meſentery to the thoracic duct, compoſe only a part of a ſyſtem of veſſels which perform the office of *abſorption*, and which conſtitute, with their common trunk, the thoracic duct, and the conglobate glands that are diſperſed through the body, what may be ſtyled the *lymphatic ſyſtem*. So that what is ſaid of the ſtructure of one of theſe ſeries of veſſels may very properly be applied to that of the other.

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109 Lymphatic veſſels.

The *lymphatic veins* (K) are minute pellucid tubes, which, like the lacteals, direct their courſe towards the centre of the body, where they pour a colourleſs fluid into the thoracic duct. The lymphatics from all the lower parts of the body gradually unite as they approach this duct, into which they enter by three or four very large trunks, that ſeem to form the lower extremity of this canal, or *receptaculum chyli*, which may be conſidered as the great trunk of the lymphatic ſyſtem. The lacteals open into it near the ſame place; and the lymphatics, from a large ſhare of the upper parts of the body, pour their lymph into different parts of this duct as it runs upwards, to terminate in the left ſubclavian vein. The lymphatics from the right ſide of the neck, thorax, and right arm, &c. terminate in the right ſubclavian vein.

As the lymphatics commonly lie cloſe to the large blood-veſſels, a ligature paſſed round the crural artery in a living animal, by encloſing the lymphatics, will occaſion a diſtention of theſe veſſels below the ligature, ſo as to demonſtrate them with eaſe; and a ligature, paſſed round the thoracic duct, inſtantly after killing an animal, will, by ſtopping the courſe of its contents into the ſubclavian vein, diſtend not only the lacteals, but alſo the lymphatics in the abdomen and lower extremities, with their natural fluids (L).

The coats of theſe veſſels are too thin to be ſeparated from each other; but the mercury they are capable of ſuſtaining, proves them to be very ſtrong; and their great power of contraction, after undergoing conſiderable diſtention, together with the irritability with which Baron Haller found them to be endued *, ſeems to render it probable, that, like the blood-veſſels, they have a muſcular coat.

* *Sur le mouvement du ſang*, Ex. 295, 298.

The lymphatics are nouriſhed after the ſame manner as

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as arteries carrying a milky fluid: but from the remote time in which he lived, they do not ſeem to have been noticed till they were diſcovered in a living dog by Aſellius, who denominated them *lacteals*, and conſidered them as ſerving to convey the chyle from the inteſtines to the liver; for before the diſcovery of the thoracic duct, the uſe of the liver was univerſally ſuppoſed to be that of converting the chyle into blood. But the diſcovery of the thoracic duct by Pecquet, not long after, corrected this error. Pecquet very candidly confeſſes, that his diſcovery accidentally aroſe from his obſerving a white fluid, mixed with the blood, flowing out of the vena cava, after he had cut off the heart of a living dog; which he ſuſpected to be chyle, and afterwards traced to its ſource from the thoracic duct: This duct had been ſeen near a hundred years before in a horſe by Euſtachius, who ſpeaks of it as a vein of a particular ſtructure, but without knowing any thing of its termination or uſe.

(K) The arteries in their courſe through the body becoming gradually too minute to admit the red globules of the blood, have then been ſtyled *capillary* or *lymphatic arteries*. The veſſels which are here deſcribed as conſtituting the lymphatic ſyſtem, were at firſt ſuppoſed to be continued from thoſe arteries, and to convey back the lymph, either into the red veins or the thoracic duct; the office of abſorption having been attributed to the *red veins*. But we know that the *lymphatic veins* are not continuations of the *lymphatic arteries*, but that they conſtitute the *abſorbent ſyſtem*. There are ſtill, however, ſome very reſpectable names among the anatomiſts of the preſent age, who contend, that the red veins act likewiſe as abſorbents: but it ſeems to have been clearly proved, that the red veins do abſorb nowhere but in the cavernous cells of the penis, the erection of which is occaſioned by a diſtention of thoſe cells with arterial blood.

(L) In the dead body they may be eaſily demonſtrated by opening the artery ramifying through any viſcus, as in the ſpleen, for inſtance, and then throwing in air; by which the lymphatics will be diſtended. One of them may then be punctured, and mercury introduced into it through a blowpipe.

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as all the other parts of the body. For even the moſt minute of theſe veſſels are probably ſupplied with ſtill more minute arteries and veins. This ſeems to be proved by the inflammation of which they are ſuſceptible; and the painful ſwellings which ſometimes take place in lymphatic veſſels prove that they have nerves as well as blood veſſels.

Both the lacteals, lymphatics, and thoracic duct, are furniſhed with valves, which are much more common in theſe veſſels than in the red veins. Theſe valves are uſually in pairs, and ſerve to promote the courſe of the chyle and lymph towards the thoracic duct, and to prevent its return. Mention has been made of the glands, through which the lacteals paſs in their courſe through the meſentery; and it is to be obſerved, that the lymphatics paſs through ſimilar glands in their way to the thoracic duct. Theſe glands are all of the conglobate kind, but the changes which the chyle and lymph undergo in their paſſage through them, have not yet been aſcertained.

The *lymphatic veſſels* begin from ſurfaces and cavities in all parts of the body as *abſorbents*. This is a fact now univerſally allowed; but how the fluids they abſorb are poured into theſe cavities, is a ſubject of controverſy. The contents of the abdomen, for inſtance, were deſcribed as being conſtantly moiſtened by a very thin watery fluid. The ſame thing takes place in the pericardium, pleura, and all the other cavities of the body, and this watery fluid is the *lymph*. But whether it is exhaled into thoſe cavities through the minute ends of arteries, or tranſuded through their coats, are the points in diſpute. We cannot here be permitted to relate the many ingenious arguments that have been advanced in favour of each of theſe opinions; nor is it perhaps of conſequence to our preſent purpoſe to enter into the diſpute. It will be ſufficient if the reader can form an idea of what the lymph is, and of the manner in which it is abſorbed,

The *lymph*, from its tranſparency and want of colour, would ſeem to be nothing but water; and hence the firſt diſcoverers of theſe veſſels ſtyled them *ductus aquoſi*: but experiments prove, that the lymph of a healthy animal coagulates by being expoſed to the air or a certain degree of heat, and likewiſe by being ſuffered to reſt; ſeeming to agree in this property with that part of the blood called the *coagulable lymph*.—This property of the lymph leads to determine its uſe, in moiſtening and lubricating the ſeveral cavities of the body in which it is found; and for which, by its gelatinous principle, it ſeems to be much better calculated than a pure and watery fluid would be, for ſuch it has been ſuppoſed to be by ſome anatomiſts.

Of the abſorbents.

The mouths of the *lymphatics* and *lacteals*, by acting as capillary tubes, ſeem to abſorb the *lymph* and *chyle* ſomewhat in the ſame manner as a capillary tube of glaſs, when put into a baſon of water, is enabled to attract the water into it to a certain height: but it is probable that they likewiſe poſſeſs a living power, which aſſiſts in performing this office. In the human body the *lymph*, or the *chyle*, is probably conveyed upon this principle as far as the firſt pair of valves, which ſeem to be placed not far from the orifice of the abſorbing veſſel, whether *lymphatic* or *lacteal*; and the fluid will then be propelled forwards, by a continuation of the abſorption at the orifice. But this does not ſeem to be the only inducement to its progreſs towards the thoracic duct; theſe veſſels have probably a muſcular coat, which may ſerve to preſs the fluid forwards from one pair of valves to another; and as the large lymphatic veſſels and the thoracic duct are placed cloſe to the large arteries, which have a conſiderable pulſation, it is reaſonable to ſuppoſe, that they derive ſome advantages from this ſituation.

Sect. XV. *Of the Generative Organs; of Conception*, &c.

§ 1. *The Male Organs.*

The male organs of generation have been uſually 110
divided into the parts which ſerve to prepare the ſemen from the blood, and thoſe which are deſtined to convey it into the womb. But it ſeems to be more proper to diſtinguiſh them into the *preparing*, the *containing*, and the *expelling* parts, which are the different offices of the *teſtes*, the *veſiculæ ſeminales*, and the *penis*; and this is the order in which we propoſe to deſcribe them.

The teſtes are two glandular bodies, ſerving to ſecrete the ſemen from the blood. They are originally formed and lodged within the cavity of the abdomen; and it is not till after the child is born, or very near that time, that they begin to paſs into the groin, and from thence into the ſcrotum (M). By this diſpoſition they are very wiſely protected from the injuries to which they would be liable to be expoſed, from the different poſitions of the child at the time of parturition.

The teſticles in this ſtate are looſely attached to the pſoæ muſcles, by means of the peritonæum by which they are covered; and they are at this time of life connected in a very particular manner to the parietes of the abdomen, and likewiſe to the ſcrotum, by means of a ſubſtance which Mr Hunter calls the *ligament* or *gubernaculum teſtis*, becauſe it connects the teſtis with the ſcrotum,

(M) It ſometimes happens in diſſecting ruptures, that the inteſtine is found in the ſame ſac, and in contact with the teſtis. This appearance was at firſt attributed to a ſuppoſed laceration of the peritonæum; but later obſervations, by pointing out the ſituation of the teſticles in the fœtus, have led to prove, that the teſtis, as it deſcends into the ſcrotum, carries with it a portion or elongation of the peritonæum, which becomes its tunica vaginalis, or a kind of ſac, in which the teſticle is lodged, as will be explained in the courſe of this ſection. The communication between this ſac and the cavity of the abdomen is uſually ſoon cut off; but in ſome ſubjects it continues open during life; and when a hernia or deſcent of the inteſtine takes place in ſuch a ſubject, it does not puſh down a portion of the peritonæum before it, as it muſt otherwiſe neceſſarily do, but paſſes at once through this opening, and comes in contact with the naked teſticle, conſtituting that particular ſpecies of rupture called *hernia congenita*.

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scrotum, and directs its course in its descent. This gubernaculum is of a pyramidal form, with its bulbous head fixed to the lower end of the testis and epididymis, and loses its lower and slender extremity in the cellular membrane of the scrotum. It is difficult to ascertain what the structure and composition of this gubernaculum is, but it is certainly vascular and fibrous; and from certain circumstances, it would seem to be in part composed of the cremaster muscle, running upwards to join the lower end of the testis.

We are not to suppose that the testicle, when descended into the scrotum, is to be seen loose as a piece of gut or omentum would be in a common hernial sac. We have already observed, that during its residence in the cavity of the abdomen it is attached to the peritonæum, which descends with it; so that when the sac is completed in the scrotum, the testicle is at first attached only to the posterior part of it, while the fore part of it lies loose, and for some time affords a communication with the abdomen. The spermatic chord, which is made up of the spermatic artery and vein, and of the vas deferens or excretory duct of the testis, is closely attached behind to the posterior part of this elongation of the peritonæum. But the fore part of the peritoneal sac, which is at first loose and not attached to the testicle, closes after a certain time, and becomes united to the posterior part, and thus perfectly surrounds the testicle as it were in a purse.

The testicles of the fœtus differ only in their size and situation from those of the adult. In their passage from the abdomen they descend through the abdominal rings into the scrotum, where they are supported and defended by various integuments.

What the immediate cause of this descent is, has not yet been satisfactorily determined. It has been ascribed to the effects of respiration, but the testicles have sometimes been found in the scrotum before the child has breathed; and it does not seem to be occasioned by the action of the cremaster muscle, because the same effect would be liable to happen in the hedgehog and some other quadrupeds, whose testicles remain in the abdomen during life.

The scrotum, which is the external or common covering of both testicles, is a kind of sac formed by the common integuments, and externally divided into two equal parts by a prominent line called *raphe*.

In the inner part of the scrotum we meet with a cellular coat called *dartos* (n), which by its duplicature divides the scrotum into two equal parts, and forms what is called *septum scroti*, which corresponds with the raphe. The collapsion which is so often observed to take place in the scrotum of the healthy subject, when excited by cold or by the stimulus of venery, seems to be very properly attributed to the contractile motion of the skin, and not to any muscular fibres, as is the case in dogs and some other quadrupeds.

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The scrotum, then, by means of its septum, is found to make two distinct bags, in which the testicles, invested by their proper tunics, are securely lodged and separated from each other. These coats are the cremaster, the tunica vaginalis, and the tunica albuginea. The first of these is composed of muscular fibres, and is to be considered only as a partial covering of the testis; for it surrounds only the spermatic chord, and terminates upon the upper and external parts of the tunica vaginalis testis, serving to draw up and suspend the testicle (o). The tunica vaginalis testis has already been described as being a thin production of the peritonæum loosely adhering everywhere to the testicle, which it includes as it were in a bag. The tunica albuginea is a firm, white, and very compact membrane of a glistening appearance, which immediately invests the body of the testis and the epididymis; serving in some measure to connect them to each other, but without extending itself at all to the spermatic chord. This tunica albuginea serves to confine the growth of the testis and epididymis within certain limits, and by giving them a due degree of firmness, enables them to perform their proper functions.

Having removed this last tunic, we discover the substance of the testicle itself, which appears to be made up of an infinite number of very elastic filaments, which may be best distinguished after macerating the testicle in water. Each testicle is made up of the spermatic artery and vein, and the excretory vessels or tubuli seminiferi. There are likewise a great number of absorbent vessels, and some branches of nerves to be met with in the testicles.

The spermatic arteries arise one on each side from the aorta, generally about an inch below the emulgents. The right spermatic vein commonly passes into the vena cava; but the left spermatic vein usually empties itself into the emulgent on that side; and it is supposed to take this course into the emulgent, that it may avoid passing over the aorta, which it would be obliged to do in its way to the vena cava.

The blood is circulated very slowly through the spermatic artery, which makes an infinite number of circumvolutions in the substance of the testicle, where it deposites the semen, which passes through the tubuli seminiferi. These tubuli seminiferi are seen running in short waves from the tunica albuginea to the axis of the testicle; and are divided into distinct portions by certain thin membranous productions, which originate from the tunica albuginea. They at length unite, and by an infinite number of convolutions form a sort of appendix to the testis called *epididymis* (p), which is a

(n) The dartos has usually been considered as a muscle, and is described as such both by Douglas and Winslow. But there being no part of the scrotum of the human subject which can be said to consist of muscular fibres, Albinus and Haller have very properly omitted to describe the dartos as a muscle, and consider it merely as a cellular coat.

(o) The cremaster muscle is composed of a few fibres from the obliquus internus abdominis, which uniting with a few from the transversalis, descend upon the spermatic chord, and are insensibly lost upon the tunica vaginalis of the testicle. It serves to suspend and draw up the testicle.

(p) The testicles were named *didymi* by the ancients; and the name of this part was given to it on account of its situation upon the testicle.

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a vaſcular body of an oblong ſhape, ſituated upon the ſuperior part of each teſticle. Theſe tubuli of the epididymis at length form an excretory duct called *vas deferens*, which aſcends towards the abdominal rings, with the other parts that make up the ſpermatic chord, and then a ſeparation takes place; the nerves and blood veſſels paſſing on to their ſeveral terminations, and the vas deferens going to depoſite its ſemen in the veſiculæ ſeminales, which are two ſoft bodies of a white and convoluted appearance externally, ſituated obliquely between the rectum and the lower part of the bladder, and uniting together at the lower extremity. From theſe reſervoirs (q), which are plentifully ſupplied with blood-veſſels and nerves, the ſemen is occaſionally diſcharged through two ſhort paſſages, which open into the urethra cloſe to a little eminence called *verumontanum*.

Near this eminence we meet with the proſtate, which is ſituated at the neck of the bladder, and is deſcribed as being of a glandular ſtructure. It is ſhaped ſomewhat like a heart with its ſmall end foremoſt, and inveſts the origin of the urethra. Internally it appears to be of a firm ſubſtance, and compoſed of ſeveral follicles, ſecreting a whitiſh viſcid fluid, that is diſcharged by ten or twelve excretory ducts into the urethra, on each ſide of the openings of the veſiculæ ſeminales at the ſame time, and from the ſame cauſe that the ſemen is expelled. As this latter fluid is found to be exceedingly limpid in the veſiculæ ſeminales of the dead ſubject, it probably owes its whiteneſs and viſcidity to this liquor of the proſtate.

The penis, which is to be conſidered as the veſſel or active organ of procreation, is compoſed of two columns, the corpora cavernoſa and corpus ſpongioſum. The corpora cavernoſa, which conſtitute the greateſt part of the penis, may be deſcribed as two cylindrical ligamentous tubes, each of which is compoſed of an infinite number of minute cells of a ſpongy texture, which communicate with each other. Theſe two bodies are of a very pliant texture, and capable of conſiderable diſtention; and being united laterally to each other, occaſion by this union a ſpace above and another below. The uppermoſt of theſe ſpaces is filled by the blood veſſels, and the lower one, which is larger than the other, by the urethra and its corpus ſpongioſum. Theſe two cavernous bodies are at firſt only ſeparated

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(q) That the bags called *veſiculæ ſeminales* are reſervoirs of ſemen, is a circumſtance which has been by anatomiſts univerſally believed. Mr J. Hunter, however, from ſeveral circumſtances, has been induced to think this opinion erroneous.

He has examined theſe veſiculæ in people who have died ſuddenly, and he found their contents to be different in their properties from the ſemen. In thoſe who had loſt one of the teſticles, or the uſe of one of them, by diſeaſe, both the veſiculæ were full, and their contents ſimilar. And in a *luſus naturæ*, where there was no communication between the vaſa deferentia and veſiculæ, nor between the veſiculæ and penis, the ſame thing took place.

From theſe obſervations, he thinks we have a preſumptive proof, That the ſemen can be abſorbed in the body of the teſticle and in the epididymis, and that the veſiculæ ſecrete a mucus which they are capable of abſorbing when it cannot be made uſe of: that the ſemen is not retained in reſervoirs after it is ſecreted, and kept there till it is uſed; but that it is ſecreted at the time in conſequence of certain affections of the mind ſtimulating the teſticles to this action.

He corroborates his obſervations by the appearance on diſſection in other animals; and here he finds, That the ſhape and contents of the veſiculæ vary much in different animals, while the ſemen in moſt of them he has examined is nearly the ſame: That the vaſa deferentia in many animals do not communicate with the veſiculæ: That the contents of the veſiculæ of caſtrated and perfect animals are ſimilar, and nearly equal in quantity, in no way reſembling the ſemen as emitted from the animal *in coitu*, or what is found in the vas deferens after death. He obſerves likewiſe, that the bulb of the urethra of perfect males is conſiderably larger than in caſtrated animals.

From the whole, he thinks the following inferences may be fairly drawn: That the bags called *veſiculæ ſeminales* are not ſeminal reſervoirs, but glands ſecreting a peculiar mucus: and that the bulb of the urethra is properly ſpeaking the receptacle of the ſemen, in which it is accumulated previous to ejection.

But although he has endeavoured to prove that the veſiculæ do not contain the ſemen, he has not been able to aſcertain their particular uſe. He thinks, however, we may be allowed upon the whole to conclude, that they are, together with other parts, ſubſervient to the purpoſes of generation.

Although the author has treated this ſubject very ably, and made many ingenious obſervations, ſome things may be objected to what he has advanced; of which the following are a few: That thoſe animals who have bags called *veſiculæ ſeminales* perform copulation quickly; whereas others that want them, as the dog kind, are tedious in copulation: That in the human body, at leaſt, there is a free communication between the vaſa deferentia and veſiculæ; and in animals where the author has obſerved no communication between the vaſa deferentia and veſiculæ, there may be a communication by veſſels not yet diſcovered, and which may be compared to the hepato-cyſtic ducts in fowls and fiſhes: That the fluid in the end of the vaſa deferentia and the veſiculæ ſeminales are ſimilar, according to the author's own obſervation: That the veſiculæ in ſome animals increaſe and decreaſe with the teſticle at particular ſeaſons: That in birds and certain fiſhes, there is a dilatation of the ends of the vaſa deferentia, which the author himſelf allows to be a reſervoir for the ſemen.

With reſpect to the circumſtance of the bulb of the urethra anſwering the purpoſe of a reſervoir, the author has mentioned no facts which tend to eſtabliſh this opinion. See *Obſervations on certain Parts of the Animal Economy*.

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parated by a partition of tendinous fibres, which allow them to communicate with each other: but they afterwards divaricate from each other like the branches of the letter Y, and diminiſhing gradually in ſize, are attached, one on each ſide, by means of the ligamentum ſuſpenſorium penis, to the ramus iſchii, and to the inferior portion of the os pubis.

The corpus ſpongioſum penis, or corpus ſpongioſum urethræ, as it is ſtyled by ſome authors, begins as ſoon as the urethra has paſſed the proſtate, with a thick origin almoſt like a heart, firſt under the urethra, and afterwards above it, becoming gradually thinner, and ſurrounding the whole canal of the urethra, till it terminates in a conſiderable expanſion, and conſtitutes what is called the *glans penis*, which is exceedingly vaſcular, and covered with papillæ like the tongue. The cuticle which lines the inner ſurface of the urethra, is continued over the glans in the ſame manner as it is ſpread over the lips.

The penis is inveſted by the common integuments, but the cutis is reflected back everywhere from the glans as it is in the eyelids; ſo that it covers this part, when the penis is in a relaxed ſtate, as it were with a hood, and from this uſe is called *prepuce*.

The prepuce is tied down to the under part of the glans by a ſmall ligament called *frænum*, which is in fact only a continuation of the cuticle and cutis. There are many ſimple ſebaceous follicles called *glandulæ odoriferæ*, placed round the baſis of the glans; and the fluid they ſecrete ſerves to preſerve the exquiſite ſenſibility of this part of the penis, and to prevent the ill effects of attrition from the prepuce.

The urethra may be defined to be a membranous canal, paſſing from the bladder through the whole extent of the penis. Several very ſmall openings, called *lacunæ*, communicate with this canal, through which a mucus is diſcharged into it; and beſides theſe, there are two glands, firſt deſcribed by Cowper, as ſecreting a fluid for lubricating the urethra, and called *Cowper's glands* (a); and Littre * ſpeaks of a gland ſituated near the proſtate, as being deſtined for the ſame uſe.

* *Memoires de l'Acad. Royale des Sciences*, 1700.

The urethra being continued from the neck of the bladder, is to be conſidered as making part of the urinary paſſage; and it likewiſe affords a conveyance to the ſemen, which we have obſerved is occaſionally diſcharged into it from the veſiculæ ſeminales. The direction of this canal being firſt under and then before the pubis, occaſions a winding in its courſe from the bladder to the penis, nor unlike the turns of the letter *S*.

The penis has three pair of muſcles, the erectores, acceleratores, and tranſverſales. They puſh the blood from the crura to the fore part of the corpora cavernoſa. The firſt originate from the tuberoſity of the iſchium, and terminate in the corpora cavernoſa. The acceleratores ariſe from the ſphincter, and by their inſertion ſerve to compreſs the bulbous part of the urethra; and the tranſverſales are deſtined to afford a paſſage to the ſemen, by dilating the canal of the urethra.

The arteries of the penis are chiefly derived from the internal iliacs. Some of them are ſuppoſed to terminate by pabulous orifices within the corpora cavernoſa and corpus ſpongioſum; and others terminate in veins, which at laſt make up the vena magna dorſi penis, and other ſmaller veins, which are in general diſtributed in like order with the arteries.

Its nerves are large and numerous. They ariſe from the great ſciatic nerve, and accompany the arteries in their courſe through the penis.

We have now deſcribed the anatomy of this organ; and there only remains to be explained, how it is enabled to attain that degree of firmneſs and diſtention which is eſſential to the great work of generation.

The greateſt part of the penis has been ſpoken of as being of a ſpongy and cellular texture, plentifully ſupplied with blood veſſels and nerves, and as having muſcles to move it in different directions. Now, the blood is conſtantly paſſing into its cells through the ſmall branches of the arteries which open into them, and is from thence as conſtantly returned by the veins, ſo long as the corpora cavernoſa and corpus ſpongioſum continue to be in a relaxed and pliant ſtate. But when, from any nervous influence, or other means which it is not neceſſary here to define or explain, the erectores penis, ejaculatores ſeminis, levatores ani, &c. are induced to contract, the veins undergo a certain degree of compreſſion, and the paſſage of the blood through them is ſo much impeded, that it collects in them in a greater proportion than they are enabled to carry off, ſo that the penis gradually enlarges, and being more and more forcibly drawn up againſt the os pubis, the vena magna itſelf is at length compreſſed, and the penis becomes fully diſtended. But as the cauſes which firſt occaſioned this diſtention ſubſide, the penis gradually returns to its ſtate of relaxation.

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§ 2. *Female Organs of Generation.*

111 Anatomical writers uſually divide the female organs of generation into *external* and *internal*. In the firſt diviſion they include the *mons veneris*, *labia pudendi*, *perinæum*, *clitoris*, *nymphæ*, and *caruncuiæ myrtiformes*: and in the latter, the *vagina*, with the *uterus* and its appendages.

The *mons veneris*, which is placed on the upper part of the ſymphyſis pubis, is internally compoſed of adipoſe membranes, which makes it ſoft and prominent: it divides into two parts called *labia pudendi*, which deſcending towards the rectum, from which they are divided by the perinæum, form what is called the *fourchette*. The perinæum is that fleſhy ſpace which extends about an inch and a half from the fourchette to the anus, and from thence about two inches to the coccyx.

The labia pudendi being ſeparated, we obſerve a ſulcus called *foſſa magna*; in the upper part of which is placed the clitoris, a ſmall round ſpongy body, in ſome meaſure reſembling the male penis, but impervious, compoſed of two corpora cavernoſa, ariſing from the tuberoſities of the oſſa iſchii; furniſhed with two pair of

(a) Both Heiſter and Morgagni obſerve, that they have ſometimes not been able to find theſe glands; ſo that they do not ſeem to exiſt in all ſubjects.

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of muſcles, the erectores clitoridis, and the ſphincter or conſtrictor oſtii vaginæ; and terminating in a glans, which is covered with its prepuce. From the lower part, on each ſide of the foſſa, paſs the nymphæ, two membranous and ſpongy folds which ſeem deſtined for uſeful purpoſes in parturition, by tending to enlarge the volume of the vagina as the child's head paſſes through it. Between theſe, about the middle of the foſſa magna, we perceive the orifice of the vagina or os externum, cloſed by folds and wrinkles; and about half an inch above this, and about an inch below the clitoris, appears the meatus urinarius or orifice of the urethra, much ſhorter, though ſomewhat larger, than in men, with a little prominence at its lower edge, which facilitates the introduction of the catheter.

The os externum is ſurrounded internally by ſeveral membranous folds called *caruncuiæ myrtiformes*, which are partly the remains of a thin membrane called *hymen*, that covers the vagina in children. In general the hymen is ſufficiently open to admit the paſſage of the menſes, if it exiſts at the time of their appearance; ſometimes, however, it has been found perfectly cloſed.

The vagina, ſituated between the urethra and the rectum, is a membranous cavity, ſurrounded, eſpecially at its external extremity, with a ſpongy and vaſcular ſubſtance, which is covered by the ſphincter oſtii vaginæ. It terminates in the uterus, about half an inch above the os tincæ, and is wider and ſhorter in women who have had children than in virgins.

All theſe parts are plentifully ſupplied with blood veſſels and nerves. Around the nymphæ there are ſebaceous follicles, which pour out a fluid to lubricate the inner ſurface of the vagina; and the meatus urinarius, like the urethra in the male ſubject, is conſtantly moiſtened by a mucus, which defends it againſt the acrimony of the urine.

The *uterus* is a hollow viſcus, ſituated in the hypogaſtric region, between the rectum and bladder. It is deſtined to receive the firſt rudiments of the fœtus, and to aſſiſt in the developement of all its parts, till it arrives at a ſtate of perfection, and is fitted to enter into the world, at the time appointed by the wiſe Author of nature.

The uterus, in its unimpregnated ſtate, reſembles a pear in ſhape, ſomewhat flattened, with its fundus or bottom part turned towards the abdomen, and its cervix or neck ſurrounded by the vagina. The entrance into its cavity forms a little protuberance, which has been compared to the mouth of a tench, and is therefore called *os tincæ*.

The ſubſtance of the uterus, which is of a conſiderable thickneſs, appears to be compoſed of muſcular and ſmall ligamentous fibres, ſmall branches of nerves, ſome lymphatics, and with arteries and veins innumerable. Its nerves are chiefly derived from the intercoſtal, and its arteries and veins from the hypogaſtric and ſpermatic. The membrane which lines its cervix is a continuation of the inner membrane of the vagina; but the outer ſurface of the body of the uterus is covered with the peritonæum, which is reflected over it, and deſcends from thence to the inteſtinum rectum. This duplicature of the peritonæum, by paſſing off from the ſides of the uterus to the ſides of the pelvis, is there firmly connected, and forms what are called *ligamenta uteri lata*; which not only ſerve to ſupport the uterus, but to convey nerves and blood veſſels to it.

The *ligamenta uteri rotunda* ariſe from the ſides of the fundus uteri, and paſſing along within the fore part of the ligamenta lata, deſcend through the abdominal rings, and terminate in the ſubſtance of the mons veneris. The ſubſtance of theſe ligaments is vaſcular; and although both they and the ligamenta lata admit the uterus, in the virgin ſtate, to move only about an inch up and down, yet in the courſe of pregnancy they admit of conſiderable diſtention, and after parturition return nearly to their original ſtate with ſurpriſing quickneſs.

On each ſide of the inner ſurface of the uterus, in the angle near the fundus, a ſmall orifice is to be diſcovered, which is the beginning of one of the tubæ Fallopianæ. Each of theſe tubes, which are two in number, paſſing through the ſubſtance of the uterus, is extended along the broad ligaments, till it reaches the edge of the pelvis, from whence it reflects back; and turning over behind the ligaments, about an inch of its extremity is ſeen hanging looſe in the pelvis, near the ovarium. Theſe extremities, having a jagged appearance, are called *fimbriæ*, or *morſus diaboli*. Each tuba Fallopiana is uſually about three or four inches long. Their cavities are at firſt very ſmall, but become gradually larger, like a trumpet, as they approach the fimbriæ.

Near the fimbriæ of each tuba Fallopiana, about an inch from the uterus, is ſituated an oval body called *ovarium*, of about half the ſize of the male teſticle. Each of theſe ovaria is covered by a production of the peritonæum, and hangs looſe in the pelvis. They are of a flat and angular form, and appear to be compoſed of a white and cellular ſubſtance, in which we are able to diſcover ſeveral minute veſicles filled with a coagulable lymph, of an uncertain number, commonly exceeding 12 in each ovary. In the female of riper years, theſe veſicles become exceedingly turgid, and a kind of yellow coagulum is gradually formed within one of them, which increaſes for a certain time. In conception, one of theſe mature ova is ſuppoſed to be impregnated with the male ſemen, and to be ſqueezed out of its nidus into the Fallopian tube; after which the ruptured part forms a ſubſtance which in ſome animals is of a yellow colour, and is therefore called *corpus luteum*; and it is obſervable, that the number of theſe ſcars or fiſſures in the ovarium, conſtantly correſponds with the number of fœtuſes excluded by the mother.

§ 3. *Of Conception.*

Man, being ever curious and inquiſitive, has naturally been led to inquire after the origin of his exiſtence; and the ſubject of generation has employed the philoſophical world in all ages: but in following nature up to her minute receſſes, the philoſopher ſoon finds himſelf bewildered; and his imagination often ſupplies that which he ſo eagerly wiſhes to diſcover, but which is deſtined perhaps never to be revealed to him. Of the many theories which have been formed on this ſubject, that of the ancient philoſophers ſeems to have been the moſt ſimple: they conſidered the male ſemen as alone capable of forming the fœtus, and believed

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believed that the female only afforded it a lodging in the womb, and ſupplied it with nouriſhment after it was perfectly formed. This opinion, however, ſoon gave place to another, in which the female was allowed a more conſiderable ſhare in conception.

This ſecond ſyſtem conſidered the fœtus as being formed by the mixture of the ſeminal liquor of both ſexes, by a certain arrangement of its ſeveral particles in the uterus. But in the 16th century, veſicles or eggs were diſcovered in the ovaria or female teſticles; the fœtus had been found ſometimes in the abdomen, and ſometimes in the Fallopian tubes; and the two former opinions were exploded in favour of a new doctrine. The ovaria were compared to a bunch of grapes, being ſuppoſed to conſiſt of veſicles, each of which had a ſtalk; ſo that it might be diſengaged without hurting the reſt, or ſpilling the liquor it contained. Each veſicle was ſaid to include a little animal, almoſt complete in all its parts; and the vapour of the male ſemen being conveyed to the ovarium, was ſuppoſed to produce a fermentation in the veſicle which approached the neareſt to maturity; and thus inducing it to diſengage itſelf from the ovarium, it paſſed into the tuba Fallopiana, through which it was conveyed to the uterus. Here it was ſuppoſed to take root like a vegetable ſeed, and to form with the veſſels originating from the uterus, what is called the *placenta*; by means of which the circulation is carried on between the mother and the fœtus.

This opinion, with all its abſurdities, continued to be almoſt univerſally adopted till the cloſe of the ſame century, when Leeuwenhoek, by means of his glaſſes, diſcovered certain opaque particles, which he deſcribed as ſo many animalcula, floating in the ſeminal fluid of the male.

This diſcovery introduced a new ſchiſm among the philoſophers of that time, and gave riſe to a ſyſtem which is not yet entirely exploded. According to this theory, the male ſemen paſſing into the tubæ Fallopianæ, one of the animalcula penetrates into the ſubſtance of the ovarium, and enters into one of its veſicles or ova. This impregnated ovum is then ſqueezed from its huſk, through the coats of the ovarium, and being ſeized by the fimbriæ, is conducted through the tube to the uterus, where it is nouriſhed till it arrives at a ſtate of perfection. In this ſyſtem there is much ingenuity; but there are certain circumſtances ſuppoſed to take place, which have been hitherto inexplicable. A celebrated modern writer, M. Buffon, endeavours to reſtore, in ſome meaſure, the moſt ancient opinion, by allowing the female ſemen a ſhare in this office; aſſerting, that animalcula or organic particles are to be diſcovered in the ſeminal liquor of both ſexes: he derives the female ſemen from the ovaria, and he contends that no ovum exiſts in thoſe parts. But in this idea he is evidently miſtaken; and the opinion now moſt generally adopted is, that an impregnation of the ovum, by the influence of the male ſemen, is eſſential to conception. That the ovum is to be impregnated, there can be no doubt; but as the manner in which ſuch an impregnation is ſuppoſed to take place, and the means by which the ovum afterwards gets into the Fallopian tube, and from thence into the uterus, are ſtill founded chiefly on hypotheſis, we will not attempt to extend farther the inveſtigation of a ſubject concerning which ſo little can be advanced with certainty.

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§ 4. *Of the Fœtus in Utero.*

Opportunities of diſſecting the human gravid uterus occurring but ſeldom, the ſtate of the embryo (s) immediately after conception cannot be perfectly known. 113

When the ovum deſcends into the uterus, it is ſuppoſed to be very minute; and it is not till a conſiderable time after conception that the rudiments of the embryo begin to be aſcertained.

About the third or fourth week the eye may diſcover the firſt lineaments of the fœtus; but theſe lineaments are as yet very imperfect, it being only about the ſize of a houſe fly. Two little veſicles appear in an almoſt tranſparent jelly; the largeſt of which is deſtined to become the head of the fœtus, and the other ſmaller one is reſerved for the trunk. But at this period no extremities are to be ſeen; the umbilical cord appears only as a very minute thread, and the placenta does not as yet abſorb the red particles of the blood. At ſix weeks, not only the head, but the features of the face, begin to be developed. The noſe appears like a ſmall prominent line, and we are able to diſcover another line under it, which is deſtined for the ſeparation of the lips. Two black points appear in the place of eyes, and two minute holes mark the ears. At the ſides of the trunk, both above and below, we ſee four minute protuberances, which are the rudiments of the arms and legs. At the end of eight weeks the body of the fœtus is upwards of an inch in length, and both the hands and feet are to be diſtinguiſhed. The upper extremities are found to increaſe faſter than the lower ones, and the ſeparation of the fingers is accompliſhed ſooner than that of the toes.

At this period the human form may be deciſively aſcertained; all the parts of the face may be diſtinguiſhed, the ſhape of the body is clearly marked out, the haunches and the abdomen are elevated, the fingers and toes are ſeparated from each other, and the inteſtines appear like minute threads.

At the end of the third month, the fœtus meaſures about three inches; at the end of the fourth month, five inches; in the fifth month, ſix or ſeven inches; in the ſixth month, eight or nine inches; in the ſeventh month, eleven or twelve inches; in the eighth month, fourteen or fifteen inches; and at the end of the ninth month, or full time, from eighteen to twenty-two inches. But as we have not an opportunity of examining the ſame fœtus at different periods of pregnancy, and as their ſize and length may be influenced by the conſtitution and mode of life of the mother, calculations of this kind muſt be very uncertain.

The fœtus during all this time aſſumes an oval figure,

(s) The rudiments of the child are uſually diſtinguiſhed by this name till the human figure can be diſtinctly aſcertained, and then it has the appellation of *fœtus*.

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gure, which corresponds with the shape of the uterus. Its chin is found reclining on its breast, with its knees drawn up towards its chin, and its arms folded over them. But it seems likely, that the posture of some of these parts is varied in the latter months of pregnancy, so as to cause those painful twitches which its mother usually feels from time to time. In natural cases, its head is probably placed towards the os tincæ from the time of conception to that of its birth; though formerly it was considered as being placed towards the fundus uteri till about the eighth or ninth month, when the head, by becoming specifically heavier than the other parts of the body, was supposed to be turned downwards.

The capacity of the uterus increases in proportion to the growth of the fœtus, but without becoming thinner in its substance, as might naturally be expected. The nourishment of the fœtus, during all this time, seems to be derived from the placenta, which appears to be originally formed by that part of the ovum which is next the fundus uteri. The remaining part of the ovum is covered by a membrane called *spongy chorion* (t); within which is another called *true chorion*, which includes a third termed *amnios* (u): this contains a watery fluid, which is the *liquor amnii* (v), in which the fœtus floats till the time of its birth. On the side next the fœtus, the placenta is covered by the amnios and true chorion; on the side next the mother it has a production continued from the spongy chorion. The amnios and chorion are remarkably thin and transparent, having no blood vessels entering into their composition. The spongy chorion is opaque and vascular.

In the first months of pregnancy, the involucra bear a large proportion to their contents; but this proportion is afterwards reversed, as the fœtus increases in bulk.

The placenta, which is the medium through which the blood is conveyed from the mother to the fœtus, and the manner in which this conveyance takes place, deserve next to be considered.

The placenta is a broad, flat, and spongy substance, like a cake, closely adhering to the inner surface of the womb, usually near the fundus, and appearing to be chiefly made up of the ramifications of the umbilical arteries and vein, and partly of the extremities of the uterine vessels. The arteries of the uterus discharge their contents into the substance of this cake; and the veins of the placenta, receiving the blood either by a direct communication of vessels, or by absorption, at length form the umbilical vein, which passes on to the sinus of the vena portæ, and from thence to the vena cava, by means of the canalis venosus, a communication that is closed in the adult. But the circulation of the blood through the heart is not conducted in the fœtus as in the adult; in the latter, the blood is carried from the right auricle of the heart through the pulmonary artery, and is returned to the left auricle by the pulmonary vein; but a dilatation of the lungs is essential to the passage of the blood through the pulmonary vessels, and this dilatation cannot take place till after the child is born and has respired. This deficiency, however, is supplied in the fœtus by an immediate communication between the right and left auricle, through an oval opening, in the septum which divides the two auricles, called *foramen ovale*. The blood is likewise transmitted from the pulmonary artery to the aorta, by means of a duct called *canalis arteriosus*, which, like the canalis venosus, and foramen ovale, gradually closes after birth.

The blood is returned again from the fœtus through two arteries, called the *umbilical arteries*, which arise from the iliacs. These two vessels taking a winding course with the vein, form with that, and the membranes by which they are surrounded, what is called the *umbilical chord*. These arteries, after ramifying through the substance of the placenta, discharge their blood into the veins of the uterus; in the same manner as the uterine arteries discharged their blood into the branches of the umbilical vein. So that the blood is constantly passing in at one side of the placenta and out at the other; but in what particular manner it gets through the placenta is a point not yet determined.

(t) Dr Hunter has described this as a lamella from the inner surface of the uterus. In the latter months of pregnancy it becomes gradually thinner and more connected with the chorion: he has named it *membrana caduca*, or *decidua*, as it is cast off with the placenta. Signior Scarpa, with more probability, considers it as being composed of an inspissated coagulable lymph.

(u) In some quadrupeds, the urine appears to be conveyed from the bladder through a canal called *urachus* to the *allantois*, which is a reservoir, resembling a long and blind gut, situated between the chorion and amnios. The human fœtus seems to have no such reservoir, though some writers have supposed that it does exist. From the top of the bladder a few longitudinal fibres are extended to the umbilical chord; and these fibres have been considered as the urachus, though without having been ever found pervious.

(v) The liquor amnii coagulates like the lymph. It has been supposed to pass into the œsophagus, and to afford nourishment to the fœtus; but this does not seem probable. Children have come into the world without an œsophagus, or any communication between the stomach and the mouth; but there has been no well attested instance of a child's having been born without a placenta; and it does not seem likely, that any of the fluid can be absorbed through the pores of the skin, the skin in the fœtus being everywhere covered with a great quantity of mucus.

EXPLANATION of PLATES XXVII. XXVIII. and XXIX.

Plate XXVII.

Fig. 1. Shows the Contents of the Thorax and Abdomen in ſitu.

1, Top of the trachea, or windpipe. 2 2, The internal jugular veins. 3 3, The ſubclavian veins. 4, The vena cava deſcendens. 5, The right auricle of the heart. 6, The right ventricle. 7, Part of the left ventricle. 8, The aorta deſcendens. 9, The pulmonary artery. 10, The right lung, part of which is cut off to ſhow the great blood veſſels. 11, The left lung entire. 12 12, The anterior edge of the diaphragm. 13 13, The two great lobes of the liver. 14, The ligamentum rotundum. 15, The gall-bladder. 16, The ſtomach. 17 17, The jejunum and ilium. 18, The ſpleen.

Fig. 2. Shows the Organs ſubſervient to the Chylopoietic Viſcera,—with thoſe of Urine and Generation.

1 1, The under ſide of the two great lobes of the liver. a, Lobulus Spigelii. 2, The ligamentum rotundum. 3, The gall-bladder. 4, The pancreas. 5, The ſpleen. 6 6, The kidneys. 7, The aorta deſcendens. 8, Vena cava aſcendens. 9 9, The renal veins covering the arteries. 10, A probe under the ſpermatic veſſels and a bit of the inferior menſenteric artery, and over the ureters. 11 11, The ureters. 12 12, The iliac arteries and veins. 13, The rectum inteſtinum. 14, The bladder of urine.

Fig. 3. Shows the Chylopoietic Viſcera, and Organs ſubſervient to them, taken out of the Body entire.

AA, The under ſide of the two great lobes of the liver. B, Ligamentum rotundum. C, The gall-bladder. D, Ductus cyſticus. E, Ductus hepaticus. F, Ductus communis choledochus. G, Vena portarum. H, Arteria hepatica. II, The ſtomach. KK, Venæ et arteriæ gaſtro-epiploicæ, dextræ et ſiniſtræ. LL, Venæ et arteriæ coronariæ ventriculi. M, The ſpleen. NN, Meſocolon, with its veſſels. OOO, Inteſtinum colon. P, One of the ligaments of the colon, which is a bundle of longitudinal muſcular fibres. QQQQ, Jejunum and ilium. RR, Sigmoid flexure of the colon with the ligament continued, and over S, the rectum inteſtinum. TT, Levatores ani. U, Sphincter ani. V, The place to which the proſtate gland is connected. W, The anus.

Fig. 4. Shows the heart of a Fœtus at the full time, with the Right Auricle cut open to ſhow the Foramen Ovale, or paſſage between both Auricles.

a, The right ventricle. b, The left ventricle. cc, The outer ſide of the right auricle ſtretched out. dd, The poſterior ſide, which forms the anterior ſide of the ſeptum. e, The foramen ovale, with the membrane or valve which covers the left ſide. f, Vena cava inferior paſſing through g, a portion of the diaphragm.

Fig. 5. Shows the Heart and Large Veſſels of a Fœtus at the full time.

a, The left ventricle. b, The right ventricle. c, A part of the right auricle. d, Left auricle. ee, The right branch of the pulmonary artery. f, Arteria pulmonalis. gg, The left branch of the pulmonary artery, with a number of its largeſt branches diſſected from the lungs. h, The canalis arterioſus. i, The arch of the aorta. kk, The aorta deſcendens. l, The left ſubclavian artery. m, The left carotid artery. n, The right carotid artery. o, The right ſubclavian artery. p, The origin of the right carotid and right ſubclavian arteries in one common trunk. q, The vena cava ſuperior or deſcendens. r, The right common ſubclavian vein. s, The left common ſubclavian vein.

N. B. All the parts deſcribed in this figure are to be found in the adult, except the canalis arterioſus.

Plate XXVIII.

Fig. 1. Exhibits the more ſuperficial Lymphatic Veſſels of the Lower Extremity.

A, The ſpine of the os ilium. B, The os pubis. C, The iliac artery. D, The knee. EEF, Branches of the crural artery. G, The muſculus gaſtrocnemius. H, The tibia. I, The tendon of the muſculus tibialis anticus. On the outlines, a, A lymphatic veſſel belonging to the top of the foot. b, Its firſt diviſion into branches. c, c, c, Other diviſions of the ſame lymphatic veſſel. d, A ſmall lymphatic gland. e, The lymphatic veſſels which lie between the ſkin and the muſcles of the thigh. ff, Two lymphatic glands at the upper part of the thigh below the groin. gg, Other glands. h, A lymphatic veſſel which paſſes by the ſide of thoſe glands without communicating with them; and, bending towards the inſide of the groin at (i), opens into the lymphatic gland (k). l, l, Lymphatic glands in the groin, which are common to the lymphatic veſſels of the genitals and thoſe of the lower extremity. m, n, A plexus of lymphatic veſſels paſſing on the inſide of the iliac artery.

Fig. 2. Exhibits a Back View of the Lower Extremity, diſſected ſo as to ſhow the deeper-ſeated Lymphatic Veſſels which accompany the Arteries.

A, The os pubis. B, The tuberoſity of the iſchium. C, That part of the os ilium which was articulated with the os ſacrum. D, The extremity of the iliac artery appearing above the groin. E, The knee. F, F, The two cut ſurfaces of the triceps muſcle, which was divided to ſhow the lymphatic veſſels that paſs through its perforation along with the crural artery. G, The edge of the muſculus gracilis. H, The gaſtrocnemius and ſoleus, much ſhrunk by being dried, and by the ſoleus being ſeparated from the tibia to expoſe the veſſels. I, The heel. K, The ſole of the foot. L, The ſuperficial lymphatic veſſels paſſing over the knee, to get to the thigh. On the outlines;

Of the Abdomen.

outlines; M, The poſterior tibial artery. a, A lymphatic veſſel accompanying the poſterior tibial artery. b, The ſame veſſel cloſing the artery. c, A ſmall lymphatic gland, through which this deep-ſeated lymphatic veſſel paſſes. d, The lymphatic veſſel paſſing under a ſmall part of the ſoleus, which is left attached to the bone, the reſt being removed. e, The lymphatic veſſel croſſing the popliteal artery. f, g, h, Lymphatic glands in the ham, through which the lymphatic veſſel paſſes. i, The lymphatic veſſel paſſing with the crural artery, through the perforation of the triceps muſcle. k, The lymphatic veſſel, after it has paſſed the perforation of the triceps, dividing into branches which embrace the artery (l). m, A lymphatic gland belonging to the deep-ſeated lymphatic veſſel. At this place thoſe veſſels paſs to the fore part of the groin, where they communicate with the ſuperficial lymphatic veſſels. n, A part of the ſuperficial lymphatic veſſel appearing on the brim of the pelvis.

FIG. 3. Exhibits the Trunk of the Human ſubject, prepared to ſhow the Lymphatic Veſſels and the Ductus Thoracicus.

A, The neck. BB, The two jugular veins. C, The vena cava ſuperior. DDDD, The ſubclavian veins. E, The beginning of the aorta, pulled to the left ſide by means of a ligature, in order to ſhow the thoracic duct behind it. F, The branches ariſing from the curvature of the aorta. GG, The two carotid arteries. HH, The firſt ribs. II, The trachea. KK, The ſpine. LL, The vena azygos. MM, The deſcending aorta. N, The cœliac artery, dividing into three branches. O, The ſuperior meſenteric artery. P, The right crus diaphragmatis. QQ, The two kidneys. R, The right emulgent artery. SS, The external iliac arteries. gd, The muſculi pſoæ. T, The internal iliac artery. U, The cavity of the pelvis. XX, The ſpine of the os ilium. YY, The groins. *a*, A lymphatic gland in the groin, into which lymphatic veſſels from the lower extremity are ſeen to enter. *bb*, The lymphatic veſſels of the lower extremities paſſing under Poupart's ligament. *cc*, A plexus of the lymphatic veſſels lying on each ſide of the pelvis. *d*, The pſoas muscle with lymphatic veſſels lying upon its inſide. *e*, A plexus of lymphatics, which having paſſed over the brim of the pelvis at (*c*), having entered the cavity of the pelvis, and received the lymphatic veſſels belonging to the viſcera contained in that cavity, next aſcends, and paſſes behind the iliac artery to (*g*). *f*, Some lymphatic veſſels of the left ſide paſſing over the upper ſide of the os ſacrum, to meet thoſe of the right ſide. *g*, The right pſoas, with a large plexus of lymphatics lying on its inſide. *hh*, The plexus lying on each ſide of the ſpine. *iii*, Spaces occupied by the lymphatic glands. *k*, The trunk of the lacteals, lying on the under ſide of the ſuperior meſenteric artery. *l*, The ſame dividing into two branches, one of which paſſes on each ſide of the aorta; that of the right ſide being ſeen to enter the thoracic duct at (*m*). *m*, The thoracic duct beginning from the large lymphatics. *n*, The duct paſſing under the lower part of the crus diaphragmatis, and under the right emulgent artery. *o*, The thoracic duct penetrating the thorax. *p*, Some lymphatic veſſels joining that duct in the thorax. *q*, The thoracic duct paſſing under the curvature of the aorta to get to the left ſubclavian vein; the aorta being drawn aſide to ſhow the duct. *r*, A plexus of lymphatic veſſels paſſing upon the trachea from the thyroid gland to the thoracic duct.

PLATE XXIX.

FIG. 1. Repreſents the Under and Poſterior Side of the Bladder of Urine, &c.

a, The bladder. bb, The inſertion of the ureters. cc, The vaſa deferentia, which convey the ſemen from the teſticles to dd, The veſiculæ ſeminales—and paſs through e, The proſtate gland, to diſcharge themſelves into f, The beginning of the urethra.

FIG. 2. A tranſverſe Section of the Penis.

gg, Corpora cavernoſa penis. h, Corpus cavernoſum urethræ. i, Urethra. k, Septum penis. ll, The ſeptum between the corpus cavernoſum urethræ and that of the penis.

FIG. 3. A longitudinal Section of the Penis.

mm, The corpora cavernoſa penis divided by o, The ſeptum penis. n, The corpus cavernoſum glandis, which is the continuation of that of the urethra.

FIG. 4. Repreſents the Female Organs of Generation.

a, That ſide of the uterus which is next the os ſacrum. 1, Its fundus. 2, Its cervix. bb, The Fallopian or uterine tubes, which open into the cavity of the uterus;—but the other end is open within the pelvis, and ſurrounded by cc, The fimbriæ. dd, The ovaria. e, The os internum uteri, or mouth of the womb. ff, The ligamenta rotunda, which paſſes without the belly, and is fixed to the labia pudendi. gg, The cut edges of the ligamenta lata, which connects the uterus to the pelvis. h, The inſide of the vagina. i, The orifice of the urethra. k, The clitoris ſurrounded by (l,) The præputium. mm, The labia pudendi. nn, The nymphæ.

FIG. 5. Shows the Spermatic Ducts of the Teſticle filled with Mercury.

A, The vas deferens. B, Its beginning, which forms the poſterior part of the epididymis. C, The middle of the epididymis, compoſed of ſerpentine ducts. D, The head or anterior part of the epididymis unravelled. eeee, The whole ducts which compoſe the head of the epididymis unravelled. ff, The vaſa deferentia. gg, Rete teſtis. hh, Some rectilineal ducts which ſend off the vaſa deferentia. ii, The ſubſtance of the teſticle.

FIG. 6. The Right Teſticle entire, and the Epididymis filled with Mercury.

A, The beginning of the vas deferens. B, The vas deferens aſcending towards the abdomen. C, The poſterior part of the epididymis, named *globus minor*. D, The ſpermatic veſſels encloſed in cellular ſubſtance. E, The body of the epididymis. F, Its head, named *globus major*. G, Its beginning from the teſticle. H, The body of the teſticle encloſed in the tunica albuginea.

CHAP. IV. OF THE THORAX.

114 Of the cheſt.

THE thorax, or cheſt, is that cavity of the trunk which extends from the clavicles, or the lower part of the neck, to the diaphragm; and includes the vital organs, which are the heart and lungs, and likewiſe the trachea and œſophagus.—This cavity is formed by the ribs and vertebræ of the back, covered by a great number of muſcles, and by the common integuments, and anteriorly by two glandular bodies called the *breaſts*. The ſpaces between the ribs are filled up by muſcular fibres, which from their ſituation are called *intercoſtal muſcles*.

SECT. I. *Of the Breaſts.*

115 THE *breaſts* may be defined to be two large conglomerate glands, mixed with a good deal of adipoſe membrane. The glandular part is compoſed of an infinite number of minute arteries, veins, and nerves.

The arteries are derived from two different trunks; one of which is called the *internal*, and the other the *external, mammary artery*. The firſt of theſe ariſes from the ſubclavian, and the latter from the axillary.

The veins everywhere accompany the arteries, and are diſtinguiſhed by the ſame name. The nerves are chiefly from the vertebral pairs. Like all other conglomerate glands, the breaſts are made up of a great many ſmall diſtinct glands, in which the milk is ſecreted from the ultimate branches of arteries. The excretory ducts of theſe ſeveral glands, gradually uniting as they approach the nipple, form the tubuli lactiferi, which are uſually more than a dozen in number, and open at its apex, but have little or no communication, as has been ſuppoſed, at the root of the nipple. Theſe ducts, in their courſe from the glands, are ſurrounded by a ligamentary elaſtic ſubſtance, which terminates with them in the nipple. Both this ſubſtance, and the ducts which it contains, are capable of conſiderable extenſion and contraction; but in their natural ſtate are moderately corrugated, ſo as to prevent an involuntary flow of milk, unleſs the diſtending force be very great from the accumulation of too great a quantity.

The whole ſubſtance of the nipple is very ſpongy and elaſtic: its external ſurface is uneven, and full of ſmall tubercles. The nipple is ſurrounded with a diſk or circle of a different colour, called the *areola*; and on the inſide of the ſkin, under the areola, are many ſebaceous glands, which pour out a mucus to defend the areola and nipple; for the ſkin upon theſe parts is very thin; and the nervous papillæ lying very bare, are much expoſed to irritation.

The breaſts are formed for the ſecretion of milk, which is deſtined for the nouriſhment of the child for ſome time after its birth. This ſecretion begins to take place ſoon after delivery, and continues to flow for many months in very large quantities, if the woman ſuckles her child.

The operation of ſuction depends on the principles of the air pump, and the flow of milk through the lactiferous tubes is facilitated by their being ſtretched out.

The milk, examined chemically, appears to be compoſed of oil, mucilage, and water, and of a conſiderable quantity of ſugar. The generality of phyſiologiſts have ſuppoſed that, like the chyle, it frequently retains the properties of the aliment and medicines taken into the ſtomach; but it has been proved by experiment *, that this ſuppoſition is ill founded.

* *Jour. de Med.* 1781.

SECT. II. *Of the Pleura.*

116 THE cavity of the thorax is everywhere lined by a membrane of a firm texture called *pleura*. It is compoſed of two diſtinct portions or bags, which, by being applied to each other laterally, form a ſeptum called *mediaſtinum*; which divides the cavity into two parts, and is attached poſteriorly to the vertebræ of the back, and anteriorly to the ſternum. But the two laminæ of which this ſeptum is formed, do not everywhere adhere to each other; for at the lower part of the thorax they are ſeparated to afford a lodgment to the heart; and at the upper part of the cavity, they receive between them the thymus.

The pleura is plentifully ſupplied with arteries and veins from the internal mammary and the intercoſtals. Its nerves, which are very inconſiderable, are derived chiefly from the dorſal and intercoſtal nerves.

The ſurface of the pleura, like that of the peritonæum and other membranes lining cavities, is conſtantly bedewed with a ſerous moiſture (w), which prevents adheſions of the viſcera.

The mediaſtinum, by dividing the breaſt into two cavities, obviates many inconveniences, to which we ſhould otherwiſe be liable. It prevents the two lobes of the lungs from compreſſing each other when we lie on one ſide; and conſequently contributes to the freedom of reſpiration, which is diſturbed by the leaſt preſſure on the lungs. If the point of a ſword penetrates between the ribs into the cavity of the thorax, the lungs on that ſide ceaſe to perform their office; becauſe the air being admitted through the wound, prevents the dilatation of that lobe; while the other lobe, which is ſeparated from it by the mediaſtinum, remains unhurt, and continues to perform its function as uſual.

SECT. III. *Of the Thymus.*

117 THE *thymus* is a glandular ſubſtance, the uſe of which is not perfectly aſcertained, its excretory duct not

(w) When this fluid is exhaled in too great a quantity, or is not properly carried off, it accumulates and conſtitutes the hydrops pectoris.

Of the Thorax.

not having yet been diſcovered. It is of an oblong figure, and is larger in the fœtus and in young children than in adults, being ſometimes nearly effaced in very old ſubjects. It is placed in the upper part of the thorax, between the two laminæ of the mediaſtinum; but at firſt is not altogether contained within the cavity of the cheſt, being found to border upon the upper extremity of the ſternum.

Sect. IV. *Of the Diaphragm.*

118 The cavity of the thorax is ſeparated from that of the abdomen by a fleſhy and membranous ſeptum called the *diaphragm* or *midriff*. The greateſt part of it is compoſed of muſcular fibres; and on this account ſyſtematic writers uſually place it very properly among the muſcles. Its middle part is tendinous, and it is covered by the pleura above, and by the peritonæum below. It ſeems to have been improperly named *ſeptum tranſverſum*, as it does not make a plane tranſverſe diviſion of the two cavities, but forms a kind of vault, the fore part of which is attached to the ſternum. Laterally it is fixed to the laſt of the true ribs, and to all the falſe ribs: and its lower and poſterior part is attached to the vertebræ lumborum, where it may be ſaid to be divided into two portions or crura (x).

The principal arteries of the diaphragm are derived from the aorta, and its veins paſs into the vena cava. Its nerves are chiefly derived from the cervical pairs. It affords a paſſage to the vena cava through its tendinous part, and to the œſophagus through its fleſhy portion. The aorta paſſes down behind it between its crura.

The diaphragm not only ſerves to divide the thorax from the abdomen, but by its muſcular ſtructure is rendered one of the chief agents in reſpiration. When its fibres contract, its convex ſide, which is turned towards the thorax, becomes gradually flat, and by increaſing the cavity of the breaſt, affords room for a complete dilatation of the lungs, by means of the air which is then drawn into them by the act of inſpiration. The fibres of the diaphragm then relax; and as it reſumes its former ſtate, the cavity of the thorax becomes gradually diminiſhed, and the air is driven out again from the lungs by a motion contrary to the former one, called *expiration*.

It is, in ſome meaſure, by means of the diaphragm, that we void the fæces at the anus, and empty the urinary bladder. Beſides theſe offices, the acts of coughing, ſneezing, ſpeaking, laughing, gaping, and ſighing, could not take place without its aſſiſtance; and the gentle preſſure which all the abdominal viſcera receive from its conſtant and regular motion, cannot fail to aſſiſt in the performance of the ſeveral functions which were aſcribed to thoſe viſcera.

Of the Trachea.

Sect. V. *Of the Trachea.*

119 The trachea, or windpipe, is a cartilaginous and membranous canal, through which the air paſſes into the lungs. Its upper part, which is called the *larynx*, is compoſed of five cartilages. The uppermoſt of theſe cartilages is placed over the glottis or mouth of the larynx, and is called *epiglottis*, which has been before ſpoken of, as cloſing the paſſage to the lungs in the act of ſwallowing. At the ſides of the glottis are placed the two arytenoid cartilages, which are of a very complex figure, not eaſy to be deſcribed. The anterior and larger part of the larynx is made up of two cartilages; one of which is called *thyroides* or *ſcutiformis*, from its being ſhaped like a buckler; and the other *cricoides* or *annularis*, from its reſembling a ring. Both theſe cartilages may be felt immediately under the ſkin; at the fore part of the throat, and the thyroides, by its convexity, forms an eminence called *pomum adami*, which is uſually more conſiderable in the male than in the female ſubject.

All theſe cartilages are united to each other by means of very elaſtic ligamentous fibres; and are enabled, by the aſſiſtance of their ſeveral muſcles, to dilate or contract the paſſage of the larynx, and to perform that variety of motion which ſeems to point out the larynx as the principal organ of the voice; for when the air paſſes out through a wound in the trachea, it produces no ſound.

Theſe cartilages are moiſtened by a mucus, which ſeems to be ſecreted by minute glands ſituated near them. The upper part of the trachea is covered anteriorly and laterally by a conſiderable body, which is ſuppoſed to be of a glandular ſtructure, and from its ſituation near the thyroid cartilage is called the *thyroid gland*; though its excretory duct has not yet been diſcovered, or its real uſe aſcertained.

The glottis is interiorly covered by a very fine membrane, which is moiſtened by a conſtant ſupply of a watery fluid. From the larynx, the canal begins to take the name of *trachea* or *aſpera arteria*, and extends from thence as far down as the third or fourth vertebra of the back, where it divides into two branches, which are the right and left bronchial tube. Each of theſe bronchi (y) ramifies through the ſubſtance of that lobe of the lungs, to which it is diſtributed, by an infinite number of branches, which are formed of cartilages, ſeparated from each other like thoſe of the trachea, by an intervening membranous and ligamentary ſubſtance. Each of theſe cartilages is of an angular figure; and as they become gradually leſs and leſs in

(x) Anatomical writers have uſually deſcribed the diaphragm as being made up of two muſcles united by a middle tendon; and theſe two portions or crura form what they ſpeak of as the *inferior muſcle*, ariſing from the ſides and fore part of the vertebræ.

(y) The right bronchial tube is uſually found to be ſomewhat ſhorter and thicker than the left; and M. Portal, who has publiſhed a memoir on the action of the lungs on the aorta in reſpiration, obſerves, that the left bronchial tube is cloſely contracted by the aorta; and from ſome experiments he is induced to conclude, that in the firſt reſpirations, the air only enters into the right lobe of the lungs. *Memoires de l'Academie Royale des Sciences*, 1769.

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in their diameter, the lower ones are in ſome meaſure received into thoſe above them, when the lungs, after being inflated, gradually collapſe by the air being puſhed out from them in expiration. As the branches of the bronchi become more minute, their cartilages become more and more angular and membranous, till at length they are found to be perfectly membranous, and at laſt become inviſible.

The trachea is furniſhed with fleſhy or muſcular fibres; ſome of which paſs through its whole extent longitudinally, while the others are carried round it in a circular direction; ſo that by the contraction or relaxation of theſe fibres, it is enabled to ſhorten or lengthen itſelf, and likewiſe to dilate or contract the diameter of its paſſage.

The trachea and its branches, in all their ramifications, are furniſhed with a great number of ſmall glands which are lodged in their cellular ſubſtance, and diſcharge a mucous fluid on the inner ſurface of theſe tubes.

The cartilages of the trachea, by keeping it conſtantly open, afford a free paſſage to the air, which we are obliged to be inceſſantly reſpiring; and its membranous part, by being capable of contraction and dilatation, enables us to receive and expel the air in a greater or leſs quantity, and with more or leſs velocity, as may be required in ſinging or in declamation. This membranous ſtructure of the trachea poſteriorly ſeems likewiſe to aſſiſt in the deſcent of the food, by preventing that impediment to its paſſage down the œſophagus, which might be expected if the cartilages were complete rings.

The trachea receives its arteries from the carotid and ſubclavian arteries, and its veins paſs into the jugulars. Its nerves ariſe from the recurrent branch of the eighth pair, and from the cervical plexus.

Sect. VI. *Of the Lungs.*

The lungs fill the greater part of the cavity of the breaſt. They are of a ſoft and ſpongy texture, and are divided into two lobes, which are ſeparated from each other by the mediaſtinum, and are externally covered by a production of the pleura. Each of theſe is divided into two or three leſſer lobes; and we commonly find three in the right ſide of the cavity, and two in the left.

To diſcover the ſtructure of the lungs, it is required to follow the ramifications of the bronchi, which were deſcribed in the laſt ſection. Theſe becoming gradually more and more minute, at length terminate in the cellular ſpaces or veſicles, which make up the greateſt part of the ſubſtance of the lungs, and readily communicate with each other.

The lungs ſeem to poſſeſs but little ſenſibility. Their nerves, which are ſmall, and few in number, are derived from the intercoſtal and eighth pair. This laſt pair having reached the thorax, ſends off a branch on each ſide of the trachea, called the *recurrent*, which reaſcends at the back of the trachea, to which it furniſhes branches in its aſcent, as well as to the œſophagus, but it is chiefly diſtributed to the larynx and its muſcles. By dividing the recurrent and ſuperior laryngeal nerves at their origin, an animal is deprived of its voice.

There are two ſeries of arteries which carry blood to the lungs: theſe are the arteriæ bronchiales, and the pulmonary artery. Of the Thorax.

The arteriæ bronchiales begin uſually by two branches; one of which commonly ariſes from the right intercoſtal, and the other from the trunk of the aorta: but ſometimes there are three of theſe arteries, and in ſome ſubjects only one. The uſe of theſe arteries is to ſerve for the nouriſhment of the lungs; and their ramifications are ſeen creeping everywhere on the branches of the bronchi. The blood is brought back from them by the bronchial veins into the vena azygos.

The pulmonary artery and vein are not intended for the nouriſhment of the lungs; but the blood in its paſſage through them is deſtined to undergo ſome changes, or to acquire certain eſſential properties (from the action of the air), which it has loſt in its circulation through the other parts of the body. The pulmonary artery receives the blood from the right ventricle of the heart; and dividing into two branches, accompanies the bronchi everywhere, by its ramifications through the lungs; and the blood is afterwards conveyed back by the pulmonary vein, which gradually forming a conſiderable trunk, goes to empty itſelf into the left ventricle of the heart; ſo that the quantity of blood which enters into the lungs, is perhaps greater than that which is ſent in the ſame proportion of time through all the other parts of the body.

Sect. VII. *Of Reſpiration.*

Respiration conſtitutes one of thoſe functions which 121
are properly termed *vital*, as being eſſential to life; for to live and to breathe are in fact ſynonymous terms. It conſiſts in an alternate contraction and dilatation of the thorax, by firſt inſpiring air into the lungs, and then expelling it from them in expiration.

It will perhaps be eaſy to diſtinguiſh and point out the ſeveral phenomena of reſpiration; but to explain their phyſical cauſe will be attended with difficulty: for it will naturally be inquired, how the lungs, when emptied of the air, and contracted by expiration, become again inflated, they themſelves being perfectly paſſive? How the ribs are elevated in oppoſition to their own natural ſituation? and why the diaphragm is contracted downwards towards the abdomen? Were we to aſſert that the air, by forcing its way into the cavity of the lungs, dilated them, and conſequently elevated the ribs and preſſed down the diaphragm, we ſhould ſpeak erroneouſly. What induces the firſt inſpiration, it is not eaſy to aſcertain; but after an animal has once reſpired, it would ſeem likely that the blood, after expiration, finding its paſſage through the lungs obſtructed, becomes a ſtimulus, which induces the intercoſtal muſcles and the diaphragm to contract, and enlarge the cavity of the thorax, in conſequence perhaps of a certain nervous influence, which we will not here attempt to explain. The air then ruſhes into the lungs; every branch of the bronchial tubes, and all the cellular ſpaces into which they open, become fully dilated; and the pulmonary veſſels being equally diſtended, the blood flows through them with eaſe. But as the ſtimulus which firſt occaſioned this dilatation ceaſes to operate, the muſcles gradually contract; the diaphragm riſes upwards again, and diminiſhes the cavity of the cheſt; the ribs

Of the Thorax.

ribs return to their former ſtate; and as the air paſſes out in expiration, the lungs gradually collapſe, and a reſiſtance to the paſſage of the blood again takes place. But the heart continuing to receive and expel the blood, the pulmonary artery begins again to be diſtended, the ſtimulus is renewed, and the ſame proceſs is repeated, and continues to be repeated, in a regular ſucceſſion, during life: for though the muſcles of reſpiration, having a mixed motion, are (unlike the heart) in ſome meaſure dependent on the will, yet no human being, after having once reſpired, can live many moments without it. In an attempt to hold one's breath, the blood ſoon begins to diſtend the veins, which are unable to empty their contents into the heart; and we are able only, during a very little time, to reſiſt the ſtimulus to inſpiration. In drowning, the circulation ſeems to be ſtopped upon this principle; and in hanging, the preſſure made on the jugular veins, may cooperate with the ſtoppage of reſpiration in bringing on death.

Till within theſe few years phyſiologiſts were entirely ignorant of the uſe of reſpiration. It was at length diſcovered in part by the illuſtrious Dr Prieſtley. He found that the air expired by animals was phlogiſticated; and that the air was fitter for reſpiration, or for ſupporting animal life, in proportion as it was freer from the phlogiſtic principle. It had long been obſerved that the blood in paſſing through the lungs acquired a more florid colour. He therefore ſuſpected, that it was owing to its having imparted phlogiſton to the air: and he ſatisfied himſelf of the truth of this idea by experiments, which ſhowed, that the craſſamentum of extravaſated blood phlogiſticated air in proportion as it loſt its dark colour. He farther found, that blood thus reddened had a ſtrong attraction for phlogiſton; inſomuch that it was capable of taking it from phlogiſticated air, thereby becoming of a darker colour. From hence it appeared that the blood, in its circulation through the arterial ſyſtem, imbibes a conſiderable quantity of phlogiſton, which is diſcharged from it to the air in the lungs.

This diſcovery has ſince been proſecuted by two very ingenious phyſiologiſts, Dr Crawford and Mr Elliot. It had been ſhow by Profeſſors Black and Irvine, that different bodies have different capacities for containing fire. For example, that oil and water, when equally hot to the ſenſe and the thermometer, contain different proportions of that principle; and that unequal quantities of it are required, in order to raiſe thoſe ſubſtances to like temperatures. The inquiries of Dr Crawford and Mr Elliot tend to prove, that the capacities of bodies for containing fire are diminiſhed by the addition of phlogiſton, and increaſed by its ſeparation: the capacity of calx of antimony, for example, being greater than that of the antimony itſelf. Common air contains a great quantity of fire; combuſtible bodies very little. In combuſtion, a double elective attraction takes place; the phlogiſton of the body being transferred to the air, the fire contained in the air to the combuſtible body. But as the capacity of the latter is not increaſed ſo much as that of the former is diminiſhed, only part of the extricated fire will be abſorbed by the body. The remainder therefore will raiſe the temperature of the compound; and hence we may account for the heat attending combuſtion. As the uſe of reſpiration is to dephlogiſticate the blood, it ſeems probable, that a like double elective attraction takes place in this proceſs; the phlogiſton of the blood being transferred to the air, and the fire contained in the air to the blood; but with this difference, that the capacities being equal, the whole of the extricated fire is abſorbed by the latter. The blood in this ſtate circulating through the body, imbibes phlogiſton, and of courſe gives out its fire; part only of which is abſorbed by the parts furniſhing the phlogiſton, the remainder, as in combuſtion, becoming ſenſible; and is therefore the cauſe of the heat of the body, or what is called animal heat.

Of the Lungs.

In confirmation of this doctrine it may be obſerved, that the venous blood contains leſs fire than the arterial; combuſtible bodies leſs than incombuſtible ones; and that air contains leſs of this principle, according as it is rendered, by combination with phlogiſton, leſs fit for reſpiration (z).

In aſcending very high mountains, reſpiration is found to become ſhort and frequent, and ſometimes to be attended with a ſpitting of blood. Theſe ſymptoms ſeem to be occaſioned by the air being too rare and thin to dilate the lungs ſufficiently; and the blood gradually accumulating in the pulmonary veſſels, ſometimes burſts through their coats and is brought up by coughing. This has likewiſe been accounted for in a different way, by ſuppoſing that the air contained in the blood, not receiving an equal preſſure from that of the atmoſphere, expands, and at length ruptures the very minute branches of the pulmonary veſſels; upon the ſame principle that fruits and animals put under the receiver of an air pump, are ſeen to ſwell as the outer air becomes exhauſted. But the late Dr Darwin publiſhed ſome experiments, in which he attempted to prove, that no air or elaſtic vapour does exiſt in the blood veſſels, as has been generally ſuppoſed; and he is induced to impute the ſpitting of blood which has ſometimes taken place in aſcending high mountains, to accident, or to violent exertions; as it never happens to animals that are put into the exhauſted receiver of an air pump, where the diminution of preſſure is many times greater than on the ſummit of the higheſt mountains.

Sect. VIII. *Of the Voice.*

Respiration has already been deſcribed as affording 122
us many advantages; and next to that of life, its moſt important uſe ſeems to be that of forming the voice and ſpeech. The ancients, and almoſt all the moderns, have conſidered the organ of ſpeech as a kind of muſical inſtrument, which may be compared to a flute, to an hautboy, to an organ, &c. and they argue after the following manner:

The trachea, which begins at the root of the tongue, and goes to terminate in the lungs, may be compared

(z) See Crawford's Experiments and Obſervations on Animal Heat, and Elliot's Philoſophical Obſervations.

Of the Thorax.

to the pipe of an organ; the lungs dilating like bellows during the time of inſpiration; and as the air is driven out from them in expiration, it finds its paſſage ſtraitened by the cartilages of the larynx, againſt which it ſtrikes. As theſe cartilages are more or leſs elaſtic, they occaſion in their turn more or leſs vibration in the air, and thus produce the ſound of the voice; the variation in the ſound and tone of which depends on the ſtate of the glottis, which, when ſtraitened, produces an acute tone, and a grave one when dilated.

M. Ferein communicated to the French Academy of Sciences a very ingenious theory on the formation of the voice. He conſidered the organ of the voice as a *ſtring* as well as a *wind* inſtrument; ſo that what art has hitherto been unable to conſtruct, and what both the fathers Merſenne and Kircher ſo much wiſhed to ſee, M. Ferein imagined he had at length diſcovered in the human body. He obſerves, that there are at the edges of the glottis certain tendinous chords, placed horizontally acroſs it, which are capable of conſiderable vibration, ſo as to produce ſound, in the ſame manner as it is produced by the ſtrings of a violin or a harpſichord: and he ſuppoſes that the air, as it paſſes out from the lungs, acts as a bow on theſe ſtrings, while the efforts of the breaſt and lungs regulate its motion, and produce the variety of tones. So that, according to this ſyſtem, the variation in the voice is not occaſioned by the dilatation or contraction of the glottis, but by the diſtention or relaxation of theſe ſtrings, the ſound being more or leſs acute in proportion as they are more or leſs ſtretched out. Another writer on this ſubject ſuppoſes, that the organ of voice is a double inſtrument, which produces in uniſon two ſounds of a different nature; one by means of the air, and the other by means of the chords of the glottis. Neither of theſe ſyſtems, however, is univerſally adopted. They are both liable to inſuperable difficulties; ſo that the manner in which the voice is formed has never yet been ſatisfactorily aſcertained: we may obſerve, however, that the ſound produced by the glottis is not articulated. To effect this, it is required to paſs through the mouth, where it is differently modified by the action of the tongue, which is either puſhed againſt the teeth, or upwards towards the palate; detaining it in its paſſage, or permitting it to flow freely, by contracting or dilating the mouth.

Sect. IX. *Of Dejection.*

113 By dejection we mean the act of voiding the faeces at the anus; and an account of the manner in which this is conducted was reſerved for this part of the work, becauſe it ſeemed to require a knowledge of reſpiration to be perfectly underſtood.

The inteſtines were deſcribed as having a periſtaltic motion, by which the faeces were gradually advancing towards the anus. Now, whenever the faeces are accumulated in the inteſtinum rectum in a ſufficient quantity to become troubleſome, either by their weight or acrimony, they excite a certain uneaſineſs which induces us to go to ſtool.—To effect this, we begin by making a conſiderable inſpiration; in conſequence of which the diaphragm is carried downwards towards the lower belly; the abdominal muſcles are at the ſame time contracted in obedience to the will: and the inteſtines being compreſſed on all ſides, the reſiſtance of the *ſphincter* is overcome, and the faeces paſs out at the anus; which is afterwards drawn up by its longitudinal fibres, which are called *levatores ani*, and then by means of its *ſphincter* is again contracted: but it ſometimes happens, as in dyſenteries for inſtance, that the faeces are very liquid, and have conſiderable acrimony; and then the irritation they occaſion is more frequent, ſo as to promote their diſcharge without any preſſure from the diaphragm or abdominal muſcles; and ſometimes involuntarily, as is the caſe when the ſphincter becomes paralytic.

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Sect. X. *Of the Pericardium, and of the Heart and its Auricles.*

124 Pericardium. The two membranous bags of the pleura, which were deſcribed as forming the mediaſtinum, recede one from the other, ſo as to afford a lodgment to a firm membranous ſac, in which the heart is ſecurely lodged; this ſac, which is the *pericardium*, appears to be compoſed of two tunics, united to each other by cellular membrane.—The outer coat, which is thick, and in ſome places of a tendinous complexion, is a production of the mediaſtinum; the inner coat, which is extremely thin, is reflected over the auricles and ventricles of the heart, in the ſame manner as the tunica conjunctiva, after lining the eyelids, is reflected over the eye.

This bag adheres to the tendinous part of the diaphragm, and contains a coagulable lymph, the *liquor pericardii*, which ſerves to lubricate the heart and facilitate its motions; and ſeems to be ſecreted and abſorbed in the ſame manner as it is in the other cavities of the body.

The arteries of the pericardium are derived from the phrenic, and its veins paſs into veins of the ſame name; its nerves are likewiſe branches of the phrenic.

The ſize of the pericardium is adapted to that of the heart, being uſually large enough to contain it looſely. As its cavity does not extend to the ſternum, the lungs cover it in inſpiration; and as it everywhere inveſts the heart, it effectually ſecures it from being injured by lymph, pus, or any other fluid, extravaſated into the cavities of the thorax.

125 Heart, and its auricles. The heart is a hollow muſcle of a conical ſhape, ſituated tranſverſely between the two laminæ of the mediaſtinum, at the lower part of the thorax; having its baſis turned towards the right ſide, and its point or apex towards the left.—Its lower ſurface is ſomewhat flattened towards the diaphragm. Its baſis, from which the great veſſels originate, is covered with fat; and it has two hollow and fleſhy appendages, called *auricles*. —Round theſe ſeveral openings, the heart ſeems to be of a firm ligamentous texture, from which all its fibres ſeem to originate; and as they advance from thence towards the apex, the ſubſtance of the heart ſeems to become thinner.

The heart includes two cavities or *ventricles*, which are ſeparated from each other by a fleſhy ſeptum; one of theſe is called the *right*, and the other the *left*, *ventricle*; though perhaps, with reſpect to their ſituation, it would be more proper to diſtinguiſh them into the *anterior* and *poſterior ventricles*.

The

Of the Thorax.

The heart is exteriorly covered by a very fine membrane; and its ſtructure is perfectly muſcular or fleſhy, being compoſed of fibres which are deſcribed as paſſing in different directions; ſome as being extended longitudinally from the baſis to the apex; others, as taking an oblique or ſpiral courſe; and a third ſort as being placed in a tranſverſe direction (A).—Within the two ventricles we obſerve ſeveral furrows; and there are likewiſe tendinous ſtrings, which ariſe from fleſhy *columnæ* in the two cavities, and are attached to the valves of the auricles: That the uſe of theſe and the other valves of the heart may be underſtood, it muſt be obſerved, that four large veſſels paſs out from the baſis of the heart, viz. two arteries and two veins; and that each of theſe veſſels is furniſhed with a thin membranous production, which is attached all round to the borders of their ſeveral orifices, from whence hanging looſely down they appear to be divided into two or three diſtinct portions. But as their uſes in the arteries and veins are different, ſo are they differently diſpoſed. Thoſe of the arteries are intended to give way to the paſſage of the blood into them from the ventricles, but to oppoſe its return: and, on the contrary, the valves of the veins are conſtructed ſo as to allow the blood only to paſs into the heart. In conſequence of theſe different uſes, we find the valves of the pulmonary artery and of the aorta attached to the orifices of thoſe veſſels, ſo as to have their concave ſurfaces turned towards the artery; and their convex ſurfaces, which mutually meet together, being placed towards the ventricle, only permit the blood to paſs one way, which is into the arteries. There are uſually three of theſe valves belonging to the pulmonary artery, and as many to the aorta; and from their figure they are called *valvulæ ſemilunares*. The communication between the two great veins and the ventricles is by means of the two appendages or auricles into which the blood is diſcharged; ſo that the other valves which may be ſaid to belong to the veins, are placed in each ventricle, where the auricle opens into it. The valves in the right ventricle are uſually three in number, and are named *valvulæ tricuſpides*; but in the left ventricle we commonly obſerve only two, and theſe are the *valvulæ mitrales*. The membranes which form theſe valves in each cavity are attached ſo as to project ſomewhat forward; and both the *tricuſpides* and the *mitrales* are connected with the tendinous ſtrings, which were deſcribed as ariſing from the fleſhy *columnæ*. By the contraction of either ventricle the blood is driven into the artery which communicates with that ventricle; and theſe tendinous ſtrings being gradually relaxed as the ſides of the cavity are brought nearer to each other, the valves naturally cloſe the opening into the auricle, and the blood neceſſarily directs its courſe into the then only open paſſage, which is into the artery; but after this contraction the heart becomes relaxed, the tendinous ſtrings are again ſtretched out, and, drawing the valves of the auricle downwards, the blood is poured by the veins into the ventricle, from whence, by another contraction, it is again thrown into the artery, as will be deſcribed hereafter. The right ventricle is not quite ſo long, though ſomewhat larger, than the left; but the latter has more ſubſtance than the other; and this ſeems to be, becauſe it is intended to tranſmit the blood to the moſt diſtant parts of the body, whereas the right ventricle diſtributes it only to the lungs.

The heart receives its nerves from the par vagum and the intercoſtals. The arteries which ſerve for its nourihment are two in number, and ariſe from the aorta. They ſurround in ſome meaſure the baſis of the heart, and from this courſe are called the *coronary arteries*. From theſe arteries the blood is returned by veins of the ſame name into the auricles, and even into the ventricles.

The muſcular bags called the *auricles* are ſituated at the baſis of the heart, at the ſides of each other; and, correſponding with the two ventricles, are like thoſe two cavities diſtinguiſhed into *right* and *left*. Theſe ſacs, which are anteriorly unequal, have externally a jagged appendix; which, from its having been compared to the extremity of an ear, has given them their name of *auricles*.

Sect. XI. *Angiology, or a Deſcription of the Blood Veſſels.*

The heart has been deſcribed as contracting itſelf, and throwing the blood from its two ventricles into the pulmonary artery and the aorta, and then as relaxing itſelf and receiving a freſh ſupply from two large veins, which are the pulmonary vein and the vena cava. We will now point out the principal diſtributions of theſe veſſels.

The *pulmonary artery* ariſes from the right ventricle by a large trunk, which ſoon divides into two conſiderable branches, which paſs to the right and left lobes of the lungs: each of theſe branches is afterwards divided and ſubdivided into an infinite number of branches and ramifications, which extend through the whole ſubſtance of the lungs; and from theſe branches the blood is returned by the veins, which, contrary to the courſe of the arteries, begin by very minute canals, and gradually become larger, forming at length four large trunks called *pulmonary veins*, which terminate in the *left auricle* by one common opening, from whence the blood paſſes into the *left ventricle*. From this ſame ventricle ariſes the *aorta* or *great artery*, which at its beginning is nearly an inch in diameter: it ſoon ſends off two branches, the *coronaries*, which go to be diſtributed to the heart and its auricles. After this, at or about the third or fourth vertebra of the back, it makes a conſiderable curvature; from this curvature (B) ariſe three arteries; one

(A) Authors differ about the courſe and diſtinctions of theſe fibres; and it ſeems right to obſerve, that the ſtructure of the heart being more compact than that of other muſcles, its fibres are not eaſily ſeparated.

(B) Anatomiſts uſually call the upper part of this curvature *aorta aſcendens*; and the other part of the artery to its diviſion at the iliacs, *aorta deſcendens*; but they differ about the place where this diſtinction is to be introduced; and it ſeems ſufficiently to anſwer every purpoſe, to ſpeak only of the aorta and its curvature.

Of the Thorax.

of which ſoon divides into two branches. The firſt two are the left ſubclavian and the left carotid, and the third is a common trunk to the right ſubclavian and right carotid; though ſometimes both the carotids ariſe diſtinctly from the aorta.

The two *carotids* aſcend within the ſubclavians, along the ſides of the trachea; and when they have reached the larynx, divide into two principal branches, the *internal* and *external carotid*. The firſt of theſe runs a little way backwards in a bending direction; and having reached the under part of the ear, paſſes through the canal in the os petroſum, and entering into the cavity of the cranium, is diſtributed to the brain and the membranes which envelope it, and likewiſe to the eye. The *external carotid* divides into ſeveral branches, which are diſtributed to the larynx, pharynx, and other parts of the neck; and to the jaws, lips, tongue, eyes, temples, and all the external parts of the head.

Each *ſubclavian* is likewiſe divided into a great number of branches. It ſends off the *vertebral artery*, which paſſes through the openings we ſee at the bottom of the tranſverſe proceſſes of the vertebræ of the neck, and in its courſe ſends off many ramifications to the neighbouring parts. Some of its branches are diſtributed to the ſpinal marrow, and after a conſiderable inflection it enters into the cranium, and is diſtributed to the brain. The ſubclavian likewiſe ſends off branches to the muſcles of the neck and ſcapula; and the mediaſtinum, thymus, pericardium, diaphragm, the breaſt, and the muſcles of the thorax, and even of the abdomen, derive branches from the ſubclavian, which are diſtinguiſhed by different names, alluding to the parts to which they are diſtributed; as the *mammary*, the *phrenic*, the *intercoſtal*, &c. But notwithſtanding the great number of branches which have been deſcribed as ariſing from the ſubclavian, it is ſtill a conſiderable artery when it reaches the *axilla*, where it drops its former name, which alludes to its paſſage under the clavicle, and is called the *axillary* artery; from which a variety of branches are diſtributed to the muſcles of the breaſt, ſcapula, and arm.—But its main trunk taking the name of *brachialis*, runs along on the inſide of the arm near the os humeri, till it reaches the joint of the fore arm, and then it divides into two branches. This diviſion, however, is different in different ſubjects; for in ſome it takes place higher up, and in others lower down. When it happens to divide above the joint, it may be conſidered as a happy diſpoſition in caſe of an accident by bleeding; for ſuppoſing the artery to be unfortunately punctured by the lancet, and that the hæmorrhage could only be ſtopped by making a ligature on the veſſel, one branch would remain unhurt, through which the blood would paſs uninterrupted to the fore arm and hand. One of the two branches of the brachialis plunges down under the flexor muſcles, and runs along the edge of the ulna; while the other is carried along the outer ſurface of the radius, and is eaſily felt at the wriſt, where it is only covered by the common integuments. Both theſe branches commonly unite in the palm of the hand, and form an arterial arch, from whence branches are detached to the fingers.

The *aorta*, after having given off at its curvature the carotids and ſubclavians which convey blood to all the upper parts of the body, deſcends upon the bodies of the vertebræ a little to the left, as far as the os ſacrum, where it drops the name of *aorta*, and divides into two conſiderable branches. In this courſe, from its curvature to its bifurcation, it ſends off ſeveral arteries in the following order: 1. One or two little arteries, firſt demonſtrated by Ruyſch as going to the bronchi, and called *arteriæ bronchiales Ruyſchii*. 2. The arteriæ œſophageæ. Theſe are commonly three or four in number. They ariſe from the fore part of the aorta, and are diſtributed chiefly to the œſophagus. 3. The inferior intercoſtal arteries, which are diſtributed between the ribs in the ſame manner as the arteries of the three or four ſuperior ribs are, which are derived from the ſubclavian. Theſe arteries ſend off branches to the medulla ſpinalis. 4. The diaphragmatic or inferior phrenic arteries, which go to the diaphragm, ſtomach, omentum, duodenum, pancreas, ſpleen, liver, and gall-bladder. 5. The cœliac, which ſends off the coronary ſtomachic, the ſplenic, and the hepatic artery. 6. The ſuperior meſenteric artery, which is diſtributed to the meſentery and ſmall inteſtines. 7. The emulgents, which go to the kidneys. 8. The arteries which are diſtributed to the glandulæ renales. 9. The ſpermatic. 10. The inferior meſenteric artery, which ramifies through the lower portion of the meſentery and the large inteſtines. A branch of this artery which goes to the rectum is called the *internal hæmorrhoidal*. 11. The lumbar arteries, and a very ſmall branch called the *ſacra*, which are diſtributed to the muſcles of the loins and abdomen, and to the os ſacrum and medulla ſpinalis.

The trunk of the aorta, when it has reached the laſt vertebra lumborum, or the os ſacrum, drops the name of *aorta*, and ſeparates into two forked branches called the *iliacs*. Each of theſe ſoon divides into two branches; one of which is called the *internal iliac*, or *hypogaſtric artery*, and is diſtributed upon the contents of the pelvis and upon the muſcles on its outer ſide. One branch, called *pudenda communis*, ſends ſmall ramifications to the end of the rectum under the name of *hæmorrhoidales externæ*, and is afterwards diſtributed upon the penis. The other branch, the external iliac, after having given off the circumflex artery of the os ilium and the epigaſtric, which is diſtributed to the recti muſcles, paſſes out of the abdomen under Poupart's ligament, and takes the name of *crural artery*. It deſcends on the inner part of the thigh cloſe to the os femoris, ſending off branches to the muſcles, and then ſinking deeper in the hind part of the thigh, reaches the ham, where it takes the name of *popliteal*: after this it ſeparates into two conſiderable branches; one of which is called the *anterior tibial artery*; the other divides into two branches, and theſe arteries all go to be diſtributed to the leg and foot.

The blood, which is thus diſtributed by the aorta to all parts of the body, is brought back by the veins, which are ſuppoſed to be continued from the ultimate branches of arteries; and uniting together as they approach the heart, at length form the large trunks, the vena cava aſcendens, and vena cava deſcendens.

All the veins which bring back the blood from the upper extremities, and from the head and breaſt, paſs into the vena cava deſcendens; and thoſe which return it from the lower parts of the body terminate in the

vena

Of the Thorax.

vena cava aſcendens, and theſe two cavas uniting together as they approach the heart, open by one common orifice into the left auricle.

It does not here ſeem to be neceſſary to follow the different diviſions of the veins as we did thoſe of the arteries; and it will be ſufficient to remark, that in general every artery is accompanied by its vein, and that both are diſtinguiſhed by the ſame name. But, like many other general rules, this too has its exceptions (c). The veins, for inſtance, which accompany the external und internal carotid, are not called the *carotid veins*, but the *external* and *internal jugular*.—In the thorax there is a vein diſtinguiſhed by a proper name, and this is the *azygos*, or *vena ſine pari*. This vein, which is a pretty conſiderable one, runs along by the right ſide of the vertebræ of the back, and is chiefly deſtined to receive the blood from the intercoſtals on that ſide, and from the lower half of thoſe on the left ſide, and to convey it into the vena cava deſcendens. In the abdomen we meet with a vein, which is a ſtill more remarkable one, and this is the *vena portæ*, which performs the office both of an artery and a vein. It is formed by a reunion of all the veins which come from the ſtomach, inteſtines, omentum, pancreas, and ſpleen, ſo as to compoſe one great trunk, which goes to ramify through the liver; and after having depoſited the bile, its ramifications unite, and bring back into the vena cava, not only the blood which the vena portæ had carried into the liver, but likewiſe the blood from the hepatic artery. Every artery has a vein which correſponds with it; but the trunks and branches of the veins are more numerous than thoſe of the arteries. The reaſons for this diſpoſition are perhaps not difficult to be explained; the blood in its courſe through the veins is much farther removed from the ſource and cauſe of its motion, which are in the heart, than it was when in the arteries; ſo that its courſe is conſequently leſs rapid, and enough of it could not poſſibly be brought back to the heart in the moment of its dilatation, to equal the quantity which is driven into the arteries from the two ventricles, at the time they contract; and the equilibrium, which is ſo eſſential to the continuance of life and health, would conſequently be deſtroyed, if the capacity of the veins did not exceed that of the arteries, in the ſame proportion that the rapidity of the blood's motion through the arteries exceeds that of its return through the veins.

A large artery ramifying through the body, and continued to the minute branches of veins, which gradually unite together to form a large trunk, may be compared to two trees united to each other at their tops; or rather as having their ramifications ſo diſpoſed that the two trunks terminate in one common point; and if we farther ſuppoſe, that both theſe trunks and their branches are hollow, and that a fluid is inceſſantly circulated through them, by entering into one of the trunks and returning through the other, we ſhall be enabled to conceive how the blood is circulated through the veſſels of the human body.

Of the Veins.

Every trunk of an artery, before it divides, is nearly cylindrical, or of equal diameter through its whole length, and ſo are all its branches when examined ſeparately. But every trunk ſeems to contain leſs blood than the many branches do into which that trunk ſeparates; and each of theſe branches probably contains leſs blood than the ramifications do into which it is ſubdivided: and it is the ſame with the veins; the volume of their ſeveral ramifications, when conſidered together, being found to exceed that of the great trunk which they form by their union.

The return of the blood through the veins to the heart, is promoted by the action of the muſcles, and the pulſation of the arteries. And this return is likewiſe greatly aſſiſted by the *valves* which are to be met with in the veins, and which conſtitute one of the great diſtinctions between them and the arteries. Theſe valves, which are ſuppoſed to be formed by the inner coat of the veins, permit the blood to flow from the extremities towards the heart, but oppoſe its return. They are moſt frequent in the ſmaller veins. As the column of blood increaſes, they ſeem to become leſs neceſſary; and therefore in the vena cava aſcendens, we meet with only one valve, which is near its origin.

The arteries are compoſed of ſeveral tunics. Some writers enumerate five of theſe tunics; but perhaps we may more properly reckon only three, viz. the *nervous*, *muſcular*, and *cuticular* coats. The veins are by ſome anatomiſts deſcribed as having the ſame number of coats as the arteries; but as they do not ſeem to be irritable, we cannot with propriety ſuppoſe them to have a muſcular tunic. We are aware of Dr Verſchuir's experiments to prove that the jugular and ſome other veins poſſeſs a certain degree of irritability; but it is certain, that his experiments, repeated by others, have produced a different reſult; and even he himſelf allows, that ſometimes he was unable to diſtinguiſh any ſuch property in the veins. Both theſe ſeries of veſſels are nouriſhed by ſtill more minute arteries and veins, which are ſeen creeping over their coats and ramifying through their whole ſubſtance, and are called *vaſa vaſorum*; they have likewiſe many minute branches of nerves.

De Arteriarum et Venarum vi irritabili, &c.

The arteries are much ſtronger than the veins; and they ſeem to require this force, to be enabled to reſiſt the impetus with which the blood circulates through them, and to impel it on towards the veins.

When the heart contracts, it impels the blood into the arteries, and ſenſibly diſtends them; and theſe veſſels again contract, as the heart becomes relaxed to receive more blood from the auricles; ſo that the cauſe of the contraction and dilatation of the *arteries* ſeems to be eaſy to be underſtood, being owing in part to their own contractile power, and in part to the action of the heart; but in the *veins*, the effects of this impulſe not being ſo ſenſibly felt, and the veſſels themſelves having little or no contractile power, the blood ſeems to flow in a conſtant and equal ſtream: and this, together with its paſſing gradually from a ſmall channel into a larger one, ſeems to be the reaſon why the

veins

(c) In the extremities, ſome of the deep-ſeated veins, and all the ſuperficial ones, take a courſe different from that of the arteries.

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veins have no pulſatory motion, except the large ones near the heart; and in theſe it ſeems to be occaſioned by the motion of the diaphragm, and by the regurgitation of the blood in the *cavas*.

Sect. XII. *Of the Action of the Heart, Auricles, and Arteries.*

127 The heart, at the time it contracts, drives the blood from its ventricles into the arteries; and the arteries being thus filled and diſtended, are naturally inclined to contract the moment the heart begins to dilate, and ceaſes to ſupply them with blood. Theſe alternate motions of contraction and dilatation of the heart and arteries, are diſtinguiſhed by the names of *ſyſtole* and *diaſtole*. When the heart is in a ſtate of contraction or ſyſtole, the arteries are at that inſtant diſtended with blood, and in their diaſtole; and it is in this ſtate we feel their pulſatory motion, which we call the *pulſe*. When the heart dilates, and the arteries contract, the blood is impelled onwards into the veins, through which it is returned back to the heart. While the heart, however, is in its ſyſtole, the blood cannot paſs from the veins into the ventricles, but is detained in the auricles, which are two reſervoirs formed for this uſe, till the diaſtole, or dilatation of the heart, takes place; and then the diſtended auricles contract, and drive the blood into the ventricles; ſo that the auricles have an alternate ſyſtole and diaſtole as well as the heart.

Although both the ventricles of the heart contract at the ſame time, yet the blood paſſes from one to the other. In the ſame moment, for inſtance, that the left ventricle drives the blood into the aorta, the right ventricle impels it into the pulmonary artery, which is diſtributed through all the ſubſtance of the lungs. The blood is afterwards brought back into the left ventricle by the pulmonary vein, at the ſame time that the blood is returned by the cavas, into the right ventricle, from all the other parts of the body.

This ſeems to be the mode of action of the heart and its veſſels: but the cauſe of this action has, like all other intricate and intereſting ſubjects, been differently explained. It ſeems to depend on the ſtimulus made on the different parts of the heart by the blood itſelf, which, by its quantity and heat, or other properties (D), is perhaps capable of firſt exciting that motion, which is afterwards continued through life, independent of the will, by a regular return of blood to the auricles, in a quantity proportioned to that which is thrown into the arteries.

The heart poſſeſſes the *vis inſita*, or principle of irritability, in a much greater degree than any other muſcle of the body. The pulſe is quicker in young than in old ſubjects, becauſe the former are *cæt. par.* more irritable than the latter. Upon the ſame principle we may explain, why the pulſe is conſtantly quicker in weak than in robuſt perſons.

Sect. XIII. *Of the Circulation.*

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After what has been obſerved of the ſtructure and action of the heart and its auricles, and likewiſe of the arteries and veins, there ſeem to be but very few arguments required to demonſtrate the *circulation of the blood*, which has long ſince been eſtabliſhed as a medical truth. This circulation may be defined to be a perpetual motion of the blood, in conſequence of the action of the heart and arteries, which impel it through all the parts of the body, from whence it is brought back by the veins to the heart.

A very ſatisfactory proof of this circulation, and a proof eaſy to be underſtood, may be deduced from the different effects of preſſure on an artery and a vein. If a ligature, for inſtance, is paſſed round an artery, the veſſel ſwells conſiderably between the ligature and the heart; whereas if we tie up a vein, it only becomes filled between the extremity and the ligature, and this is what we every day obſerve in bleeding. The ligature we paſs round the arm on theſe occaſions, compreſſes the ſuperficial veins; and the return of the blood through them being impeded, they become diſtended. When the ligature is too looſe, the veins are not ſufficiently compreſſed, and the blood continues its progreſs towards the heart; and, on the contrary, when it is made too tight, the arteries themſelves become compreſſed; and the flow of the blood through them being impeded, the veins cannot be diſtended.

Another phenomenon, which effectually proves the circulation, is the loſs of blood that every living animal ſuſtains by opening only a ſingle artery of a moderate ſize; for it continues to flow from the wounded veſſel till the equilibrium is deſtroyed which is eſſential to life. This truth was not unknown to the ancients; and it ſeems ſtrange that it did not lead them to a knowledge of the circulation, as it ſufficiently proves, that all the other veſſels muſt communicate with that which is opened. Galen who lived more than 1500 years ago, drew this concluſion from it; and if we farther obſerve, that he deſcribes (after Eraſiſtratus, who flouriſhed about 450 years before him) the ſeveral valves of the heart, and determines their diſpoſition and uſes, it will appear wonderful, that a period of near 2000 years ſhould afterwards elapſe before the true courſe of the blood was aſcertained. This diſcovery, for which we are indebted to the immortal Harvey, has thrown new lights on phyſiology and the doctrine of diſeaſes, and conſtitutes one of the moſt important periods of anatomical hiſtory.

Sect. XIV. *Of the Nature of the Blood.*

129 Blood, recently drawn from a vein into a baſon, would ſeem to be an homogeneous fluid of a red colour (E); but when ſuffered to reſt, it ſoon coagulates, and divides into two parts, which are diſtinguiſhed by the

(D) Dr Harvey long ago ſuggeſted, that the blood is poſſeſſed of a living principle; and the late Mr J. Hunter has endeavoured to revive this doctrine; in ſupport of which he has adduced many ingenious arguments. The ſubject is a curious one, and deſerves to be proſecuted as an inquiry which cannot but be intereſting to phyſiologiſts.

(E) The blood, as it flows through the arteries, is obſerved to be more florid than it is in the veins; and this redneſs is acquired in its paſſage through the lungs. Vid. Sect. VII.

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the names of *craſſamentum* and *ſerum*. The craſſamentum is the red coagulum, and the ſerum is the water in which it floats. Each of theſe may be again ſeparated into two others; for the craſſamentum, by being repeatedly waſhed in warm water, gives out all its red globules, and what remains appears to be compoſed of the coagulable lymph (F), which is a gelatinous ſubſtance, capable of being hardened by fire till it becomes perfectly horny: and if we expoſe the ſerum to a certain degree of heat, part of it will be found to coagulate like the white of an egg, and there will remain a clear and limpid water, reſembling urine both in its appearance and ſmell.

The ſerum and craſſamentum differ in their proportion in different conſtitutions; in a ſtrong perſon, the craſſamentum is in a greater proportion to the ſerum than in a weak one*; and the ſame difference is found to take place in diſeaſes (G).

* *Hewſon's Experim. Inq.* Part I.

Sect. XV. *Of Nutrition.*

130 The variety of functions which we have deſcribed as being inceſſantly performed by the living body, and the continual circulation of the blood through it, muſt neceſſarily occaſion a conſtant diſſipation of the ſeveral parts which enter into its compoſition. In ſpeaking of the inſenſible perſpiration, we obſerved how much was inceſſantly paſſing off from the lungs and the ſurface of the ſkin. The diſcharge by urine is likewiſe every day conſiderable; and great part of the bile, ſaliva, &c. are excluded by ſtool. But the ſolid, as well as the fluid parts of the body, require a conſtant renewal of nutritious particles. They are expoſed to the attrition of the fluids which are circulated through them; and the contraction and relaxation they repeat ſo many thouſand times in every day, would neceſſarily occaſion a diſſolution of the machine, if the renewal was not proportioned to the waſte.

It is eaſy to conceive how the chyle formed from the aliment is aſſimilated into the nature of blood, and repairs the loſs of the fluid parts of our body; but how the ſolids are renewed, has never yet been ſatisfactorily explained. The nutritious parts of the blood are probably depoſited by the arteries by exudation through their pores into the ſolid cellules; and as the ſolid parts of the body are in the embryo only a kind of jelly, which gradually acquires the degree of conſiſtence they are found to have when the body arrives at a more advanced age, and theſe ſame parts which conſiſt of bones, cartilages, ligaments, muſcles, &c. are ſometimes reduced again by diſeaſe to a gelatinous ſtate; we may, with ſome degree of probability, conſider the coagulable lymph as the ſource of nutrition.

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If the ſupply of nouriſhment exceeds the degree of waſte, the body increaſes; and this happens in infancy and in youth: for at thoſe periods, but more particularly the former one, the fluids bear a large proportion to the ſolids; and the fibres being ſoft and yielding, are proportionably more capable of extenſion and increaſe. But when the ſupply of nutrition only equals the waſte, we neither increaſe nor decreaſe; and we find this to be the caſe when the body has attained its full growth or *acme*: for the ſolids having then acquired a certain degree of firmneſs and rigidity, do not permit a farther increaſe of the body. But as we approach to old age, rigidity begins to be in exceſs, and the fluids (H) bear a much leſs proportion to the ſolids than before. The diſſipation of the body is greater than the ſupply of nouriſhment; many of the ſmaller veſſels become gradually impervious (I); and the fibres loſing their moiſture and their elaſticity, appear flaccid and wrinkled. The lilies and the roſes diſappear, becauſe the fluids by which they were produced can no longer reach the extremities of the capillary veſſels of the ſkin. As theſe changes take place, the nervous power being proportionably weakened, the irritability and ſenſibility of the body, which were formerly ſo remarkable, are greatly diminiſhed; and in advanced life, the hearing, the eye-ſight, and all the other ſenſes, become gradually impaired.

Sect. XVI. *Of the Glands and Secretions.*

The glands are commonly underſtood to be ſmall, roundiſh, or oval bodies, formed by the convolution of a great number of veſſels, and deſtined to ſeparate particular humours from the maſs of blood.

They are uſually divided into two claſſes; but it ſeems more

(F) It may not be improper to obſerve, that till of late the *coagulable lymph* has been confounded with the *ſerum* of the blood, which contains a ſubſtance that is likewiſe coagulable, though only when expoſed to heat, or combined with certain chemical ſubſtances; whereas the other coagulates ſpontaneouſly when expoſed to the air or to reſt.

(G) When the blood ſeparates into *ſerum* and *craſſamentum*, if the latter be covered with a cruſt of a whitiſh or buff colour, it has been uſually conſidered as a certain proof of the blood's being in a ſtate of too great viſcidity. This appearance commonly taking place in inflammatory diſeaſes, has long ſerved to confirm the theory which aſcribes the cauſe of inflammation to lentor and obſtructions. But from the late Mr Hewſon's experiments it appears, that when the action of the arteries is increaſed, the blood, inſtead of being more viſcid, is on the contrary, more fluid than in the ordinary ſtate previous to inflammation; and that in conſequence of this, the coagulable lymph ſuffers the red globules, which are the heavieſt part of the blood, to fall down to the bottom before it coagulates: ſo that the craſſamentum is divided into two parts; one of which is found to conſiſt of the coagulable lymph alone (in this caſe termed the *buff*); and the other, partly of this and partly of the red globules.

(H) As the fluids become leſs in proportion to the ſolids, their acrimony is found to increaſe; and this may perhaps compenſate for the want of fluidity in the blood, by diminiſhing its coheſion.

(I) In infancy, the arteries are numerous and large in reſpect to the veins, and the lymphatic glands are larger than at any other time of life; whereas, in old age, the capacity of the venous ſyſtem exceeds that of the arteries, and the lymphatic ſyſtem almoſt diſappears.

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more proper to distinguish three kinds of glands, viz. the mucous, conglobate, and conglomerate.

The *mucous glands*, or follicles as they are most commonly called, are small cylindrical tubes continued from the ends of arteries. In some parts of the body, as in the tonsils, for example, several of these follicles may be seen folded together in one common covering, and opening into one common sinus. These follicles are the vessels that secrete and pour out mucus in the mouth, œsophagus, stomach, intestines, and other parts of the body.

The *conglobate glands* are peculiar to the lymphatic system. Every lymphatic vein passes through a gland of this kind in its way to the thoracic duct. They are met with in different parts of the body, particularly in the axilla, groin, and mesentery, and are either solitary or in distinct clusters.

The *conglomerate glands* are of much greater bulk than the conglobate, and seem to be an assemblage of many smaller glands. Of this kind are the liver, kidneys, &c. Some of them, as the pancreas, parotids, &c. have a granulated appearance. All these conglomerate glands are plentifully supplied with blood vessels: but their nerves are in general very minute, and few in number. Each little granulated portion furnishes a small tube, which unites with other similar ducts, to form the common excretory duct of the gland.

The principal glands, and the humours they secrete, have been already described in different parts of this work; and there only remains for us to examine the general structure of the glands, and to explain the mechanism of secretion. On the first of these subjects two different systems have been formed; each of which has had, and still continues to have, its adherents. One of these systems was advanced by Malpighi, who supposed that an artery entering into a gland ramifies very minutely through its whole substance; and that its branches ultimately terminate in a vesicular cavity or follicle, from whence the secreted fluid passes out through the excretory duct. This doctrine at first met with few opponents; but the celebrated Ruysch, who first attempted minute injections with wax, afterwards disputed the existence of these follicles, and asserted, that every gland appears to be a continued series of vessels, which, after being repeatedly convoluted in their course through its substance, at length terminate in the excretory duct. Anatomists are still divided between these two systems: that of Malpighi, however, seems to be the best founded.

The mode of secretion has been explained in a variety of ways, and they are all perfectly hypothetical. In such an inquiry, it is natural to ask, how one gland constantly separates a particular humour, while another gland secretes one of a very different nature from the blood? The bile, for instance, is separated by the liver, and the urine by the kidneys. Are these secretions to be imputed to any particular dispositions in the fluids? or is their cause to be looked for in the solids?

It has been supposed, that every gland contains within itself a fermenting principle, by which it is enabled to change the nature of the blood it receives, and to endue it with a particular property. Thus, according to this system, the blood, as it circulates through the kidneys, becomes mixed with the fermenting principle of those glands, and a part of it is converted into urine; and again in the liver, in the salival and other glands, the bile, the saliva, and other juices, are generated from a similar cause. But it seems to be impossible for any liquor to be confined in a place exposed to the circulation, without being carried away by the torrent of blood, every part of which would be equally affected; and this system of fermentation has long been rejected as vague and chimerical. But as the cause of secretion continued to be looked for in the fluids, the former system was succeeded by another, in which recourse was had to the analogy of the humours. It was observed, that if paper be moistened with water, and oil and water be afterwards poured upon it, the water only will be permitted to pass through it, but that, on the other hand, if the paper has been previously soaked in oil instead of water, the oil only, and not the water, will be filtered through it. These observations led to a supposition, that every secretory organ is originally furnished with a humour analogous to that which it is afterwards destined to separate from the blood; and that in consequence of this disposition, the secretory vessels of the liver, for instance, will only admit the bilious particles of the blood, while all the other humours will be excluded. This system is an ingenious one, but the difficulties with which it abounds are unanswerable: for oil and water are immiscible; whereas the blood, as it is circulated through the body, appears to be a homogeneous fluid. Every oil will pass through a paper moistened only with one kind of oil; and wine, or spirits mixed with water, will easily be filtered through a paper previously soaked in water. Upon the same principle, all our humours, though differing in their other properties, yet agreeing in that of being perfectly miscible with each other, will all easily pass through the same filtre.—But these are not all the objections to this system. The humours which are supposed to be placed in the secretory vessels for the determination of similar particles from the blood, must be originally separated without any analogous fluid; and that which happens once, may as easily happen always. Again, It sometimes happens, from a vitious disposition, that humours are filtered through glands which are naturally not intended to afford them a passage: and when this once has happened, it ought, according to this system, to be expected always to do so: whereas this is not the case; and we are, after all, naturally led to seek for the cause of secretion in the solids. It does not seem right to ascribe it to any particular figure of the secretory vessels; because the soft texture of those parts does not permit them to preserve any constant shape, and our fluids seem to be capable of accommodating themselves to every kind of figure. Some have imputed it to the difference of diameter in the orifices of the different secretory vessels. To this doctrine objections have likewise been raised; and it has been argued, that the vessels of the liver, for instance, would upon this principle, afford a passage not only to the bile, but to all the other humours of less consistence with it. In reply to this objection, it has been supposed, that secondary vessels exist, which originate from the first, and permit all the humours thinner than the bile to pass through them.

Each of these hypotheses is probably very remote from the truth.

EXPLANATION

EXPLANATION of PLATE XXX.

This Plate repreſents the Heart in ſitu, all the large Arteries and Veins, with ſome of the Muſcles, &c.

Muscles, &c.—Superior Extremity.—a, Maſſeter. b, Complexus. c, Digaſtricus. d, Os hyoides. e, Thyroid gland. f, Levator ſcapulæ. g, Cucullaris. hh, The clavicles cut. i, The deltoid muſcle. k, Biceps flexor cubiti cut. l, Coraco-brachialis. m, Triceps extenſor cubiti. n, The heads of the pronator teres, flexor carpi radialis, and flexor digitorum ſublimis, cut. o, The flexor carpi ulnaris cut at its extremity. p, Flexor digitorum profundus. q, Supinator radii longus, cut at its extremity. r, Ligamentum carpi tranſverſale. s, Extenſores carpi radiales. t, Latiſſimus dorſi. u, Anterior edge of the ſerratus anticus major. vv, The inferior part of the diaphragm. ww, Its interior edge cut. xx, The kidneys. y, Tranſverſus abdominis. z, Os ilium.

Inferior Extremity.—*a*, Pſoas magnus. *b*, Iliacus internus. *c*, The fleſhy origin of the tenſor vaginæ femoris. *dd*, The oſſa pubis cut from each other. *e*, Muſculus pectineus cut from its origin. *f*, Short head of the triceps adductor femoris cut. *g*, The great head of the triceps. *h*, The long head cut. *i*, Vaſtus internus. *k*, Vaſtus externus. *l*, Crureus. *m*, Gemellus. *n*, Soleus. *o*, Tibia. *p*, Peronæus longus. *q*, Peronæus brevis. *r*, Fibula.

Heart and Blood Vessels.—A, The heart, with the coronary arteries and veins. B, The right auricle of the heart. C, The aorta aſcendens. D, The left ſubclavian artery. E, The left carotid artery. F, The common trunk which ſends off the right ſubclavian and right carotid arteries. G, The carotis externa. H, Arteria facialis, which ſends off the coronary arteries of the lips. I, Arteria temporalis profunda. K, Aorta deſcendens. LL, The iliac arteries,—which ſend off MM, The femoral or crural arteries. *N. B.* The other arteries in this figure have the ſame diſtribution as the veins of the ſame name:—And generally, in the anatomical plates, the deſcription to be found on the one ſide points out the ſame parts in the other. 1, The frontal vein. 2, The facial vein. 3, Vena temporalis profunda. 4, Vena occipitalis. 5, Vena jugularis externa. 6, Vena jugularis interna, covering the arteria carotis communis. 7, The vaſcular arch on the palm of the hand, which is formed by 8, the radial artery and vein, and, 9, the ulnar artery and vein. 10 10, Cephalic vein. 11, Baſilic vein, that on the right ſide, cut. 12, Median vein. 13, The humeral vein, which, with the median, covers the humeral artery. 14 14, The external thoracic or mammary arteries and veins. 15, The axillary vein, covering the artery. 16 16, The ſubclavian veins, which, with (66) the jugulars, form, 17, The vena cava ſuperior. 18, The cutaneous arch of veins on the fore part of the foot. 19, The vena tibialis antica, covering the artery. 20, The vena profunda femoris, covering the artery. 21, The upper part of the vena ſaphena major. 22, The femoral vein. 23 23, The iliac veins. 24 24, Vena cava inferior. 25 25, The renal veins covering the arteries. 26 26, The diaphragmatic veins.

CHAP. V. OF THE BRAIN AND NERVES.

Sect. I. *Of the Brain and its Integuments.*

732 THE bones of the cranium were deſcribed in the oſteological part of this work, as encloſing the brain and defending it from external injury: but they are not its only protection; for when we make a horizontal ſection through theſe bones, we find this maſs everywhere ſurrounded by two membranes (k), the dura and pia mater.—The firſt of theſe lines the interior ſurface of the cranium, to which it everywhere adheres ſtrongly (l), but more particularly at the ſutures, and at the many foramina through which veſſels paſs between it and the pericranium. The *dura mater* (m) is perfectly ſmooth and inelaſtic, and its inner ſurface is conſtantly bedewed with a fine pellucid fluid, which everywhere ſeparates it from the pia mater. The dura mater ſends

733 Integuments of the brain.

(k) The Greeks called theſe membranes *meninges*; but the Arabians, ſuppoſing them to be the ſource of all the other membranes of the body, afterwards gave them the name of *dura* and *pia mater*; by which they are now uſually diſtinguiſhed.

(l) In young ſubjects this adheſion is greater than in adults; but even then, in the healthy ſubject, it is nowhere eaſily ſeparable, without breaking through ſome of the minute veſſels by means of which it is attached to the bone.

(m) This membrane is commonly deſcribed as conſiſting of two laminæ; of which the external one is ſuppoſed to perform the office of perioſteum internum to the cranium, while the internal one forms the folds and proceſſes of the dura mater. In the natural ſtate, however, no ſuch ſeparation is apparent; like other membranes, we may indeed divide it, not into two only, but many laminæ; but this diviſion is artificial, and depends on the dexterity of the anatomiſt.

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off ſeveral conſiderable proceſſes, which divide the brain into ſeparate portions, and prevent them from compreſſing each other. Of theſe proceſſes there is one ſuperior and longitudinal, called the *falx* or *falciform proceſs*, from its reſemblance to a ſcythe. It ariſes from the ſpine of the os frontis, near the criſta galli, and extending along in the direction of the ſagittal ſuture, to beyond the lambdoidal ſuture, divides the brain into two hemiſpheres. A little below the lambdoidal ſuture, it divides into two broad wings or expanſions called the *tranſverſe* or *lateral proceſſes*, which prevent the lobes of the cerebrum from preſſing on the cerebellum. Beſides theſe there is a fourth, which is ſituated under the tranſverſe proceſſes, and being continued to the ſpine of the occiput, divides the cerebellum into two lobes.

The blood, after being diſtributed through the cavity of the cranium by means of the arteries, is returned, as in the other parts of the body, by veins which all paſs on to certain channels ſituated behind theſe ſeveral proceſſes.

Theſe canals or ſinuſes communicate with each other, and empty themſelves into the internal jugular veins, which convey the blood into the vena cava. They are in fact triangular veins, running through the ſubſtance of the dura mater, and, like the proceſſes, are diſtinguiſhed into *longitudinal* and *lateral*; and where theſe three meet, and where the fourth proceſs paſſes off, we obſerve a fourth ſinus, which is called *torcular*; Herophilus, who firſt deſcribed it, having ſuppoſed that the blood at the union of theſe two veins, is, as it were, in a preſs.

Beſides theſe four canals, which were known to the ancients, modern anatomiſts enumerate many others, by giving the appellation of *ſinuſes* to other veins of the dura mater, which for the moſt part empty themſelves into ſome of thoſe we have juſt now deſcribed. There are the inferior longitudinal ſinus, the ſuperior and inferior petrous ſinuſes, the cavernous ſinuſes, the circular ſinus, and the anterior and poſterior occipital ſinuſes.

Theſe ſinuſes or veins, by being conveyed through a thick denſe membrane, firmly ſuſpended, as the dura mater is, within the cranium, are leſs liable to rupture; at the ſame time they are well ſupported, and by running everywhere along the inner ſurface of the bones, they are prevented from preſſing on the ſubſtance of the brain. To prevent too great a dilatation of them, we find filaments (called *chordæ Williſii*, from their having been firſt noticed by Willis) ſtretched acroſs their cavities; and the oblique manner in which the veins from the brain run through the ſubſtance of the brain into theſe channels, ſerves the purpoſe of a valve, which prevents the blood from turning back into the ſmaller and weaker veſſels of the brain.

The *pia mater* is a much ſofter and finer membrane than the dura mater; being exceedingly delicate, tranſparent, and vaſcular. It inveſts every part of the brain, and ſends off an infinite number of elongations, which inſinuate themſelves between the convolutions, and even into the ſubſtance of the brain. This membrane is compoſed of two laminæ; of which the exterior one is named *tunica arachnoidea*, from its thinneſs, which is equal to that of a ſpider's web. Theſe two laminæ are intimately adherent to each other, at the upper part of the brain, but are eaſily ſeparable at the baſis of the brain, and through the whole length of the medulla ſpinalis. The external layer, or tunica arachnoidea, appears to be ſpread uniformly over the ſurface of the brain, but without entering into its furrows as the inner layer does; the latter being found to inſinuate itſelf between the convolutions, and even into the interior cavities of the brain. The blood-veſſels of the brain are diſtributed through it in their way to that organ, and are therefore divided into very minute ramifications, before they penetrate the ſubſtance of the brain.

134 The brain.

There are ſeveral parts included under the general denomination of *brain*. One of theſe, which is of the ſofteſt conſiſtence, and fills the greateſt part of the cavity of the cranium, is the *cerebrum*, or *brain* properly ſo called. Another portion, which is ſeated in the inferior and poſterior part of the head, is the *cerebellum*; and a third, which derives its origin from both theſe, is the *medulla oblongata*.

135 Cerebrum.

The *cerebrum* is a medullary maſs of a moderate conſiſtence, filling up exactly all the upper part of the cavity of the cranium, and divided into two hemiſpheres by the falx of the dura mater. Each of theſe hemiſpheres is uſually diſtinguiſhed into *an interior*, *a middle*, and *a poſterior lobe*. The firſt of theſe is lodged on the orbital proceſſes of the os frontis; the middle lobes lie in the middle foſſæ of the baſis of the cranium, and the poſterior lobes are placed on the tranſverſe ſeptum of the os occipitis, immediately over the cerebellum, from which they are ſeparated by the lateral proceſſes of the dura mater. Theſe two portions afford no diſtinguiſhing mark of ſeparation; and on this account Haller, and many other modern anatomiſts, omit the diſtinction of the middle lobe, and ſpeak only of the anterior and poſterior lobes of the brain.

The cerebrum appears to be compoſed of two diſtinct ſubſtances. Of theſe, the exterior one, which is of a grayiſh or aſh colour, is called the *cortex*, and is ſomewhat ſofter than the other, which is very white, and is called *medulla*, or *ſubſtantia alba*.

After having removed the falx, and ſeparated the two hemiſpheres from each other, we perceive a white convex body, the corpus calloſum, which is a portion of the medullary ſubſtance, uniting the two hemiſpheres to each other, and not inveſted by the cortex. By making a horizontal inciſion into the brain, on a level with this corpus calloſum, we diſcover two oblong cavities, named the *anterior* or *lateral ventricles*, one in each hemiſphere. Theſe two ventricles, which communicate with each other by a hole immediately under the plexus choroides, are ſeparated laterally by a very fine medullary partition, called *ſeptum lucidum*, from its thinneſs and tranſparency. The lower edge of this ſeptum is fixed to the fornix, which is a kind of medullary arch (as its name implies) ſituated under the corpus calloſum, and nearly of a triangular ſhape. Anteriorly the fornix ſends off two medullary chords, called its *anterior crura*; which ſeem to be united to each other by a portion of medullary ſubſtance, named *commiſſura anterior cerebri*. Theſe crura diverging from one another, are loſt at the outer ſide of the lower and fore part of the third ventricle. Poſteriorly the fornix is formed into two other crura, which unite with

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with two medullary protuberances, called *pedes hippocampi*, and sometimes *cornua ammonis*, that extend along the back part of the lateral ventricles. The concave edge of the pedes hippocampi is covered by a medullary lamina, called *corpus fimbriatum*.

Neither the edges of the fornix, nor its posterior crura, can be well distinguished, till we have removed the plexus choroides. This is a production of the pia mater, which is spread over the lateral ventricles. Its loose edges are collected, so as to appear like a valvular band on each side.

When we have removed this plexus, we discover several other protuberances included in the lateral ventricles. These are the corpora striata, the thalami nervorum opticorum, the tubercula quadrugemina, and the pineal gland.

The *corpora striata* are two curved oblong eminences, that extend along the anterior part of the lateral ventricles. They derive their name from their striated appearance, which is owing to an intermixture of the cortical and medullary substances of the brain. The *thalami nervorum opticorum*, are so called, because the optic nerves arise chiefly from them, and they are likewise composed both of the cortex and medulla. They are separated from the corpora striata only by a kind of medullary chord, the geminum centrum semicirculare. The thalami are nearly of an oval shape, and are situated at the bottom of the upper cavity of the lateral ventricles. They are closely united, and at their convex part seem to become one body.

Anteriorly, in the space between the thalami, we observe an orifice by which the lateral ventricles communicate, and another leads down from this, under the different appellations of *foramen commune anterius*, *vulva*, *iter ad infundibulum*, but more properly *iter ad tertium ventriculum*; and the separation of the thalami from each other posteriorly, forms another opening or interstice called *anus*. This has been supposed to communicate with the third ventricle; but it does not, the bottom of it being shut up by the pia mater. The back part of the anus is formed by a kind of medullary band, which connects the thalami to each other, and is called *commissura posterior cerebri*.

Behind the thalami and commissura posterior, we observe a small, soft, grayish, and oval body, about the size of a pea. This is the glandula pinealis; it is described by Galen under the name of *conarion*, and has been rendered famous by Descartes, who supposed it to be the seat of the soul. Galen seems formerly to have entertained the same opinion. Some modern writers have, with as little reason, imagined that the soul is placed in the corpus callosum.

The pineal gland rests upon four remarkable eminences, disposed in pairs, and seated immediately below it. These tubercles, which by the ancients were called *testes* and *nates*, have, since the time of Winslow, been more commonly named *tubercula quadrugemina*.

Under the thalami we observe another cavity, the third ventricle, which terminates anteriorly in a small medullary canal, the infundibulum, that leads to the glandula pituitaria. It has been doubted, whether the infundibulum is really hollow; but some late experiments on this part of the brain * by Professor Murray of Upsal, clearly prove it to be a medullary canal, surrounded by both laminæ of the pia mater. After tracing the brain, this channel was found filled with ice; and De Haen tells us, he found it dilated, and filled with a calcareous matter (x).

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* *Disp. de Commerc. Lymph. Chyl. et Sang. Med.* p. 271.

The soft spongy body in which the infundibulum terminates, was by the ancients supposed to be of a glandular structure, and destined to filter the serosity of the brain. Spigelius pretended to have discovered its excretory duct, but it seems certain that no such duct exists. It is of an oblong shape, composed, as it were of two lobes. In ruminant animals it is much larger than in man.

From the posterior part of the third ventricle, we see a small groove or channel, descending obliquely backwards. This channel, which is called the *aqueduct of Sylvius*, though it was known to the ancients, opens into another cavity of the brain, placed between the cerebellum and medulla oblongata, and called the *fourth ventricle*.

Cerebellum.

The *cerebellum*, which is divided into two lobes, is commonly supposed to be of a firmer texture than the cerebrum; but the truth is, that in the greater number of subjects, there appears to be no sensible difference in the consistence of these two parts. It has more of the cortical than of the medullary substance in its composition.

The furrow that divides the two lobes of the cerebellum leads anteriorly to a process, composed of medullary and cortical substances, covered by the pia mater; and which, from its being divided into numerous furrows, resembling the rings of the earth worm, is named *processus vermiformis*. This process forms a kind of ring in its course between the lobes.

The surface of the cerebellum does not afford those circumvolutions which appear in the cerebrum; but instead of these, we observe a great number of minute furrows, running parallel to each other, and nearly in a transverse direction. The pia mater insinuates itself into these furrows.

When we cut into the substance of the cerebellum, from above downwards, we find the medullary part running in a kind of ramifying course, and exhibiting an appearance that has gotten the name of *arbor vitæ*. These ramifications unite to form a medullary trunk; the middle, anterior, and most considerable part of which forms two processes, the crura cerebelli, which unite with the crura cerebri, to form the medulla oblongata. The rest furnishes two other processes, which lose themselves, under the nates, and thus unite the lobes of the cerebellum to the posterior part of the cerebrum. Under the nates we observe a transverse medullary line, or linea alba, running from one of these processes to the other; and between them we find a very thin medullary lamina, covered with the pia mater, which the generality of anatomists have (though seemingly without reason) considered as a valve formed for closing the communication between the fourth ven-

(x) The under part of it, however, appears to be impervious; at least no injection than can be depended on has been made to pass from it into the glandula pituitaria without laceration of parts.

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tricle and the aquæductus Sylvii. Vieuſſens named it *valvula major cerebri*.

137 Medulla oblongata.

The *medulla oblongata* is ſituated in the middle, lower, and poſterior part of the cranium, and may be conſidered as a production or continuation of the whole medullary ſubſtance of the cerebrum and cerebellum, being formed by the union of two conſiderable medullary proceſſes of the cerebrum, called *crura cerebri*, with two other ſmaller ones from the cerebellum, which were juſt now ſpoken of under the name of *crura cerebelli*.

The crura cerebri ariſe from the middle and lower part of each hemiſphere. They are ſeparated from each other at their origin, but are united below, where they terminate in a middle protuberance, the *pons Varolii*, ſo called becauſe Varolius compared it to a bridge. This name, however, can convey no idea of its real appearance. It is in fact, nothing more than a medullary protuberance, nearly of a hemiſpherical ſhape, which unites the crura cerebri to thoſe of the cerebellum.

Between the crura cerebri, and near the anterior edge of the pons Varolii, are two tubercles, compoſed externally of medullary; and internally of cineritious ſubſtance, to which Euſtachius firſt gave the name of *eminentiæ mamillares*.

Along the middle of the poſterior ſurface of the medulla oblongata, where it forms the anterior part of the fourth ventricle, we obſerve a kind of furrow which runs downwards and terminates in a point. About an inch above the lower extremity of this fiſſure, ſeveral medullary filaments are to be ſeen running towards it on each ſide in an oblique direction ſo as to give it the appearance of a writing pen; hence it is called *calamus ſcriptorius*.

From the poſterior part of the pons Varolii, the medulla oblongata deſcends obliquely backwards; at its fore part, immediately behind the pons Varolii, we obſerve two pair of eminences, which were deſcribed by Euſtachius, but received no particular appellation till the time of Vieuſſens, who gave them the names of *corpora olivaria* and *corpora pyramidalia*. The former are the outermoſt, being placed one on each ſide. They are nearly of an oval ſhape, and are compoſed of medulla, with ſtreaks of cortical ſubſtance. Between theſe are the corpora pyramidalia, each of which terminates in a point. In the human ſubject theſe four eminences are ſometimes not eaſily diſtinguiſhed.

138 Medulla ſpinalis.

The *medulla ſpinalis*, or *ſpinal marrow*, which is the name given to the medullary chord that is extended down the vertebral canal, from the great foramen of the occipital bone to the bottom of the laſt lumbar vertebra, is a continuation of the medulla oblongata. Like the other parts of the brain, it is inveſted by the dura and pia mater. The firſt of theſe, in its paſſage out of the cranium, adheres to the foramen of the os occipitis. Its connection with the ligamentary ſubſtance that lines the cavity of the ſpine, is only by means of cellular membrane; but between the ſeveral vertebræ, where the nerves paſs out of the ſpine, it ſends off prolongations, which adhere ſtrongly to the vertebral ligaments. Here, as in the cranium, the dura mater has its ſinuſes or large veins. Theſe are two in number, and are ſeen running on each ſide of the medullary column, from the foramen magnum of the os occipitis to the lower part of the os ſacrum. They communicate together by ramifying branches at each vertebra, and terminate in the vertebral, intercoſtal, and ſacral veins.

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The pia mater is connected with the dura mater by means of a thin tranſparent ſubſtance, which from its indentations between the ſpinal nerves has obtained the name of *ligamentum denticulatum*. It is ſomewhat firmer than the tunica arachnoidea, but in other reſpects reſembles that membrane. Its uſe is to ſupport the ſpinal marrow, that it may not affect the medulla oblongata by its weight.

The ſpinal marrow itſelf is externally of a white colour; but, upon cutting into it, we find its middle part compoſed of a darker coloured maſs, reſembling the cortex of the brain. When the marrow has reached the firſt lumbar vertebra, it becomes extremely narrow, and at length terminates in an oblong protuberance; from the extremity of which the pia mater ſends off a prolongation or ligament, reſembling a nerve, that perforates the dura mater, and is fixed to the os coccygis.

The medulla ſpinalis gives riſe to 30 or 31 pair of nerves, but they are not all of the ſame ſize, nor do they all run in the ſame direction. The upper ones are thinner than the reſt, and are placed almoſt tranſverſely: as we deſcend, we find them running more and more obliquely downwards, till at length their courſe is almoſt perpendicular, ſo that the lowermoſt nerves exhibit an appearance that is called *cauda equina*, from its reſemblance to a horſe's tail.

The arteries that ramify through the different parts of the brain are derived from the internal carotid and from the vertebral arteries. The medulla ſpinalis is ſupplied by the anterior and poſterior ſpinal arteries, and likewiſe receives branches from the cervical, the inferior and ſuperior intercoſtal, the lumbar, and the ſacral arteries.

Sect. II. *Of the Nerves.*

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The nerves are medullary chords, differing from each other in ſize, colour, and conſiſtence, and deriving their origin from the medulla oblongata and medulla ſpinalis. There are 39, and ſometimes 40, pair of the nerves; nine (o) of which originate from the medulla oblongata, and 30 or 31 from the medulla ſpinalis. They appear to be perfectly inelaſtic, and likewiſe to poſſeſs no irritability. If we irritate muſcular fibres, they immediately contract; but nothing of this ſort happens if we irritate a nerve. They carry with them a covering from the pia mater; but derive no tunic from the dura mater, as hath been generally, though erroneouſly, ſuppoſed, ever ſince the time of Galen

(o) It has been uſual to deſcribe ten pair of nerves as ariſing from the medulla oblongata; but as the tenth pair ariſe in the ſame manner as the other ſpinal nerves, Santorini, Heiſter, Haller, and others, ſeem very properly to have claſſed them among the nerves of the ſpine.

Of the Brain and Nerves.

Galen (p), the outer covering of the nerves being in fact nothing more than cellular membrane. This covering is very thick where the nerve is expoſed to the action of muſcles; but where it runs through a bony canal, or is ſecure from preſſure, the cellular tunic is extremely thin, or altogether wanting. We have inſtances of this in the portio mollis of the auditory nerve, and in the nerves of the heart.

By elevating, carefully and gently, the brain from the baſis of the cranium, we find the firſt nine pair ariſing in the following order: 1. The nervi olfactorii, diſtributed through the pituitary membrane, which conſtitutes the organ of ſmell. 2. The optici, which go to the eyes, where they receive the impreſſions of viſible objects. 3. The oculorum motores, ſo called becauſe they are diſtributed to the muſcles of the eye. 4. The pathetici, diſtributed to the ſuperior oblique muſcles of the eyes, the motion of which is expreſſive of certain paſſions of the ſoul. 5. The nerves of this pair ſoon divide into three principal branches, and each of theſe has a different name. Its upper diviſion is the ophthalmicus, which is diſtributed to various parts of the eyes, eyelids, forehead, noſe, and integuments of the face. The ſecond is called the *maxillaris ſuperior*, and the third *maxillaris inferior*; both which names allude to their diſtribution. 6. The abductores; each of theſe nerves is diſtributed to the abductor muſcle of the eye, ſo called, becauſe it helps to draw the globe of the eye from the noſe. 7. The auditorii (q), which are diſtributed through the organs of hearing. 8. The par vagum, which derives its name from the great number of parts, to which it gives branches both in the thorax and abdomen. 9. The linguales, or hypogloſſi, which are diſtributed to the tongue, and appear to contribute both to the organ of taſte and to the motions of the tongue (r).

It has already been obſerved, that the ſpinal marrow ſends off 30 or 31 pair of nerves; theſe are chiefly diſtributed to the exterior parts of the trunk and to the extremities. They are commonly diſtinguiſhed into the *cervical*, *dorſal*, *lumbar*, and *ſacral nerves*. The cervical, which paſs out from between the ſeveral vertebræ of the neck, are eight (s) in number; the dorſal, twelve; the lumbar, five; and the ſacral, five or ſix; the number of the latter depending on the number of holes in the os ſacrum. Each ſpinal nerve at its origin is compoſed of two faſciculi of medullary fibres. One of theſe faſciculi ariſes from the anterior, and the other from the poſterior, ſurface of the medulla. Theſe faſciculi are ſeparated by the ligamentum denticulatum; after which we find them contiguous to one another. They then perforate the dura mater, and unite to form a conſiderable knot or ganglion. Each of theſe ganglions ſends off two branches; one anterior, and the other poſterior. The anterior branches communicate with each other at their coming out of the ſpine, and likewiſe ſend off one, and ſometimes more branches, to aſſiſt in the formation of the intercoſtal nerve.

Of the Brain and Nerves.

The knots or ganglions of the nerves juſt now ſpoken of, are not only to be met with at their exit from the ſpine, but likewiſe in various parts of the body. They occur in the nerves of the medulla oblongata, as well as in thoſe of the ſpine. They are not the effects of diſeaſe, but are to be met with in the ſame parts of the ſame nerves, both in the fœtus and adult. They are commonly of an oblong ſhape, and of a grayiſh colour, ſomewhat inclined to red, which is perhaps owing to their being extremely vaſcular. Internally we are able to diſtinguiſh ſomething like an intermixture of the nervous filaments.

Some writers have conſidered them as ſo many little brains; Lanciſi fancied he had diſcovered muſcular fibres in them, but they are certainly not of an irritable nature. A late writer, Dr Johnſtone *, imagines they are intended to deprive us of the power of the will over certain parts, as the heart, for inſtance: but if this hypotheſis were well founded, we ſhould meet with them only in nerves leading to involuntary muſcles; whereas it is certain, that the voluntary muſcles receive their nerves through ganglions. Dr Monro, from obſerving the accurate intermixture of the minute nerves which compoſe them, conſiders them as new ſources of nervous energy †.

* *Eſſay on the Uſe of the Ganglions of the Nerves.*

The

† *Obſervations on the Nervous Syſtem.*

(p) Baron Haller and Profeſſor Zinn ſeem to have been the firſt who demonſtrated, that the dura mater is reflected upon and adheres to the perioſteum at the edges of the foramina that afford a paſſage to the nerves out of the cranium and vertebral canal, or is ſoon loſt in the cellular ſubſtance.

(q) This pair, ſoon after its entrance into the meatus auditorius internus, ſeparates into two branches. One of theſe is of a very ſoft and pulpy conſiſtence, is called the *portio mollis* of the ſeventh pair, and is ſpread over the inner part of the ear. The other paſſes out through the aqueduct of Fallopius in a firm chord, which is diſtinguiſhed as the portio dura, and is diſtributed to the external ear and other parts of the neck and face.

(r) Heiſter has ſummed up the uſes of theſe nine pair of nerves in the two following Latin verſes:

"*Olfaciens, cernens, oculoſque movens, patienſque,*
"*Guſtans, abducens, audienſque, vaganſque, loquenſque.*"

(s) Beſides theſe, there is another pair called *acceſſorii*, which ariſes from the medulla ſpinalis at its beginning; and aſcending through the great foramen of the os occipitis into the cranium, paſſes out again cloſe to the eighth pair, with which, however, it does not unite; and it is afterwards diſtributed chiefly to the muſcles of the neck, back, and ſcapula. In this courſe it ſends off filaments to different parts, and likewiſe communicates with ſeveral other nerves. Phyſiologiſts are at a loſs how to account for the ſingular origin and courſe of theſe nervi acceſſorii. The ancients conſidered them as branches of the eighth pair, diſtributed to muſcles of the ſcapula: Willis likewiſe conſidered them as appendages to that pair, and on that account named them *acceſſorii*. They are ſometimes called the *ſpinal* pair; but as this latter name is applicable to all the nerves of the ſpine indiſcriminately, it ſeems better to adopt that given by Willis.

Of the Brain and Nerves.

The nerves, like the blood veſſels, in their courſe through the body, communicate with each other; and each of theſe communications conſtitutes what is called a *plexus*, from whence branches are again detached to different parts of the body. Some of theſe are conſtant and conſiderable enough to be diſtinguiſhed by particular names, as the *ſemilunar plexus*, the *pulmonary plexus*, the *hepatic*, the *cardiac*, &c.

It would be foreign to the purpoſe of this work to follow the nerves through all their diſtributions; but it may be remembered, that in deſcribing the different viſcera, mention was made of the nerves diſtributed to them. There is one pair, however, called the *intercoſtal*, or *great ſympathetic nerve*, which ſeems to require particular notice, becauſe it has an almoſt univerſal connexion and correſpondence with all the other nerves of the body. Authors are not perfectly agreed about the origin of the intercoſtal; but it may perhaps not improperly be deſcribed, as beginning from filaments of the fifth and ſixth pair; it then paſſes out of the cranium, through the bony canal of the carotid, from whence it deſcends laterally cloſe to the bodies of the vertebræ, and receives branches from almoſt all the vertebral nerves; forming almoſt as many ganglions in its courſe through the thorax and abdomen. It ſends off an infinite number of branches to the viſcera in thoſe cavities, and forms ſeveral plexus with the branches of the eighth pair or par vagum.

That the nerves are deſtined to convey the principles of motion and ſenſibility to the brain from all parts of the ſyſtem, there can be no doubt; but how theſe effects are produced, no one has ever yet been able to determine. The inquiry has been a conſtant ſource of hypotheſis in all ages, and has produced ſome ingenious ideas, and many erroneous poſitions, but without having hitherto afforded much ſatisfactory information.

Of the Brain and Nerves.

Some phyſiologiſts have conſidered a trunk of nerves as a ſolid chord, capable of being divided into an infinite number of filaments, by means of which the impreſſions of feeling are conveyed to the ſenſorium commune. Others have ſuppoſed it to be a canal, which afterwards ſeparates into more minute channels; or, perhaps, as being an aſſemblage of many very ſmall and diſtinct tubes, connected to each other, and thus forming a cylindrical chord. They who contend for their being ſolid bodies are of opinion, that feeling is occaſioned by vibration; ſo that, for inſtance, according to this ſyſtem, by pricking the finger, a vibration would be occaſioned in the nerve diſtributed through its ſubſtance; and the effects of this vibration, when extended to the ſenſorium, would be an excital of pain. But the inelaſticity, the ſoftneſs, the connexion, and the ſituation of the nerves, are ſo many proofs that vibration has no ſhare in the cauſe of feeling.

Others have ſuppoſed, that in the brain and ſpinal marrow a very ſubtle fluid is ſecreted, and from thence conveyed through the imperceptible tubes, which they conſider as exiſting in the nerves. They have further ſuppoſed, that this very ſubtle fluid, to which they have given the name of *animal ſpirits*, is ſecreted in the cortical ſubſtance of the brain and ſpinal marrow, from whence it paſſes through the medullary ſubſtance. This, like the other ſyſtem, is founded altogether on hypotheſis; but it ſeems to be a hypotheſis derived from much more probable principles, and there are many ingenious arguments to be brought in its ſupport.

EXPLANATION OF PLATE XXXI.

FIG. 1. Repreſents the Inferior part of the Brain; —the Anterior part of the whole ſpine, including the Medulla Spinalis;—with the origin and large portions of all the NERVES.

AA, The anterior lobes of the cerebrum. BB, The lateral lobes of the cerebrum. CC, The two lobes of the cerebellum. D, Tuber annulare. E, The paſſage from the third ventricle to the infundibulum. F, The medulla oblongata, which ſends off the medulla ſpinalis through the ſpine. GG, That part of the os occipitis which is placed above (HH) the tranſverſe proceſſes of the firſt cervical vertebra. II, &c. The ſeven cervical vertebræ, with their intermediate cartilages. KK, &c. The twelve dorſal vertebræ, with their intermediate cartilages. LL, &c. The five lumbar vertebræ, with their intermediate cartilages. M, The os ſacrum. N, The os coccygis.

NERVES.—11, The firſt pair of nerves, named *olfactory*, which goes to the noſe. 2 2, The ſecond pair, named *optic*, which goes to form the tunica retina of the eye. 3 3, The third pair, named *motor oculi*; it ſupplies moſt of the muſcles of the eyeballs. 4 4, The fourth pair, named *pathetic*,—which is wholly ſpent upon the muſculus trochlearis of the eye. 5 5, The fifth pair divides into three branches.—The firſt, named *ophthalmic*, goes to the orbit, ſupplies the lachrymal gland, and ſends branches out to the forehead and noſe.—The ſecond, named *ſuperior maxillary*, ſupplies the teeth of the upper jaw, and ſome of the muſcles of the lips.—The third, named *inferior maxillary*, is ſpent upon the muſcles and teeth of the lower jaw, tongue, and muſcles of the lips. 6 6, The ſixth pair, which, after ſending off the beginning of the intercoſtal or great ſympathetic, is ſpent upon the abductor oculi. 7 7, The ſeventh pair, named *auditory*, divides into two branches.—The largeſt, named *portio mollis*, is ſpent upon the internal ear.—The ſmalleſt, *portio dura*, joins to the fifth pair within the internal ear by a reflected branch from the ſecond of the fifth; and within the tympanum, by a branch from the third of the fifth, named *chorda tympani*.—Vid. fig. 3. near B. 88, &c. The eighth pair, named *par vagum*,—which accompanies the intercoſtal, and is ſpent upon the tongue, larynx, pharynx, lungs, and abdominal viſcera. 9 9, The ninth pair, which are ſpent upon the tongue. 10 10, &c. The intercoſtal, or great ſympathetic, which is ſeen from the ſixth pair to the bottom of the pelvis on each ſide of the ſpine, and joining with all the nerves of the ſpine; in its progreſs ſupplying the heart, and, with the par vagum, the contents of the abdomen and pelvis. 11 11, The acceſſorius, which is ſpent upon the ſternocleido-maſtoidæus and trapezius muſcles.

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muſcles. 12 12, The firſt cervical nerves; 13 13, The ſecond cervical nerves; both ſpent upon the muſcles that lie on the neck, and teguments of the neck and head. 14 14, The third cervical nerves, which, after ſending off (15 15, &c.) the phrenic nerves to the diaphragm, ſupply the muſcles and teguments that lie on the ſide of the neck, and top of the ſhoulder. 16 16, The brachial plexus, formed by the fourth, fifth, ſixth, ſeventh cervicals, and firſt dorſal nerves,—which ſupply the muſcles, and teguments of the ſuperior extremity. 17 17, The twelve dorſal, or proper intercoſtal nerves, which are ſpent upon the intercoſtal muſcles and ſome of the large muſcles which lie upon the thorax. 18 18, The five lumbar pairs of nerves which ſupply the lumbar and abdominal muſcles, and ſome of the teguments and muſcles of the inferior extremity. 19 19, The ſacro-ſciatic, or poſterior crural nerve, formed by the two inferior lumbar, and three ſuperior of the os ſacrum. This large nerve ſupplies the greateſt part of the muſcles and teguments of the inferior extremity. 20, The ſtomachic plexus, formed by the eighth pair. 21 21, Branches of the ſolar or cæliac plexus, formed by the eighth pair and intercoſtal, which ſupply the ſtomach and chylopoietic viſcera. 22 22, Branches of the ſuperior and inferior meſenteric plexuſes, formed by the fifth pair and intercoſtals, which ſupply the chylopoietic viſcera, with part of the organs of urine and generation. 23 23, Nerves which accompany the ſpermatic chord. 24 24, The hypogaſtric plexus, which ſupplies the organs of urine and generation within the pelvis.

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FIG. 2, 3, 4, 5, Show different views of the Inferior part of the Brain, cut perpendicularly through the Middle—with the Origin and large portions of all the Nerves which paſs out through the Bones of the Cranium,—and the three firſt Cervicals.

A, The anterior lobe. B, The lateral lobe of the cerebrum. C, One of the lobes of the cerebellum. D, Tuber annulare. E, Corpus pyramidale, in the middle of the medulla oblongata. F, The corpus olivare, in the ſide of the medulla oblongata. G, The medulla oblongata. H, The medulla ſpinalis.

NERVES.—1 2 3 4 5 6 7 8 and 9. Pairs of nerves. 10 10, Nervus acceſſorius, which comes from—11, 12, and 13, the three cervical nerves.

CHAP. VI. OF THE SENSES, AND THEIR ORGANS.

140 IN treating of the ſenſes, we mean to confine ourſelves to the external ones of *touch*, *taſte*, *ſmelling*, *hearing*, and *viſion*. The word *ſenſe*, when applied to theſe five, ſeems to imply not only the ſenſation excited in the mind by certain impreſſions made on the body, but likewiſe the organ deſtined to receive and tranſmit theſe impreſſions to the ſenſorium. Each of theſe organs being of a peculiar ſtructure, is ſuſceptible only of particular impreſſions, which will be pointed out as we proceed to deſcribe each of them ſeparately.

SECT. I. *Of Touch.*

141 THE ſenſe of touch may be defined to be the faculty of diſtinguiſhing certain properties of bodies by the feel. In a general acceptation, this definition might perhaps not improperly be extended to every part of the body poſſeſſed of ſenſibility (r); but it is commonly confined to the nervous papillæ of the cutis, or true ſkin, which, with its appendages, and their ſeveral uſes, have been already deſcribed.

The exterior properties of bodies, ſuch as their ſolidity, moiſture, inequality, ſmoothneſs, dryneſs, or fluidity, and likewiſe their degree of heat, ſeem all to be capable of making different impreſſions on the papillæ, and conſequently of exciting different ideas in the ſenſorium commune. But the organ of touch, like all the other ſenſes, is not equally delicate in every part of the body, or in every ſubject; being in ſome much more exquiſite than it is in others.

SECT. II. *Of Taſte.*

THE ſenſe of taſte is ſeated chiefly in the tongue; the 142
ſituation and figure of which are ſufficiently known.

On the upper ſurface of this organ we may obſerve a great number of papillæ, which, on account of their difference in ſize and ſhape, are commonly divided into three claſſes. The largeſt are ſituated towards the baſis of the tongue. Their number commonly varies from ſeven to nine, and they ſeem to be mucous follicles. Thoſe of the ſecond claſs are ſomewhat ſmaller, and of a cylindrical ſhape. They are moſt numerous about the middle of the tongue. Thoſe of the third claſs are very minute, and of a conical ſhape. They are

(r) In the courſe of this article, mention has often been made of the ſenſibility or inſenſibility of different parts of the body: it will therefore, perhaps, not be amiſs to obſerve in this place, that many parts which were formerly ſuppoſed to poſſeſs the moſt exquiſite ſenſe, are now known to have but little or no feeling, at leaſt in a ſound ſtate; for in an inflamed ſtate, even the bones, the moſt inſenſible parts of any, become ſuſceptible of the moſt painful ſenſations. This curious diſcovery is due to the late Baron Haller. His experiments prove, that the bones, cartilages, ligaments, tendons, epidermis, and membranes (as the pleura, pericardium, dura and pia mater, periоſteum, &c.), may in a healthy ſtate be conſidered as inſenſible. As ſenſibility depends on the brain and nerves, of courſe different parts will poſſeſs a greater or leſs degree of feeling, in proportion as they are ſupplied with a greater or ſmaller number of nerves. Upon this principle it is, that the ſkin, muſcles, ſtomach, inteſtines, urinary bladder, ureters, uterus, vagina, penis, tongue, and retina, are extremely ſenſible, while the lungs and glands have only an obſcure degree of feeling.

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are very numerous on the apex and edges of the tongue, and have been ſuppoſed to be formed by the extremities of its nerves.

We obſerve a line, the *linea linguæ mediana*, running along the middle of the tongue, and dividing it as it were into two portions. Towards the baſis of the tongue, we meet with a little cavity, named by Morgagni *foramen cæcum*, which ſeems to be nothing more than a common termination of ſome of the excretory ducts of mucous glands ſituated within the ſubſtance of the tongue.

We have already obſerved, that this organ is everywhere covered by the cuticle, which, by forming a reduplication, called the *frænum*, at its under part, ſerves to prevent the too great motion of the tongue, and to fix it in its ſituation. But, beſides this attachment, the tongue is connected, by means of its muſcles and membranous ligaments, to the lower jaw, the os hyoides, and the ſtyloid proceſſes.

The principal arteries of the tongue are the linguales, which ariſe from the external carotid. Its veins empty themſelves into the external jugulars. Its nerves ariſe from the fifth, eighth, and ninth pair.

The variety of taſtes ſeems to be occaſioned by the different impreſſions made on the papillæ by the food. The different ſtate of the papillæ with reſpect to their moiſture, their figure, or their covering, ſeems to produce a conſiderable difference in the taſte, not only in different people, but in the ſame ſubject, in ſickneſs and in health. The great uſe of the taſte ſeems to be to enable us to diſtinguiſh wholeſome and ſalutary food from that which is unhealthy; and we obſerve that many quadrupeds, by having their papillæ (u) very large and long, have the faculty of diſtinguiſhing flavours with infinite accuracy.

Sect. III. *Of Smelling.*

143 The ſenſe of ſmelling, like the ſenſe of taſte, ſeems intended to direct us to a proper choice of aliment, and is chiefly ſeated in the noſe, which is diſtinguiſhed into its external and internal parts. The ſituation and figure of the former of theſe do not ſeem to require a definition. It is compoſed of bones and cartilages, covered by muſcular fibres and by the common integuments. The bones make up the upper portion, and the cartilages the lower one. The ſeptum narium, like the noſe, is likewiſe in part bony, and in part cartilaginous. Theſe bones and their connexions were deſcribed in the oſteology.

The internal part of the noſe, beſides the oſſa ſpongioſa, has ſix cavities or ſinuſes, the maxillary, the frontal, and the ſphenoid, which were all deſcribed with the bones of the head. They all open into the noſtrils; and the noſe likewiſe communicates with the mouth, larynx, and pharynx, poſteriorly behind the velum palati.

All theſe ſeveral parts, which are included in the internal diviſion of the noſe, viz. the inner ſurface of the noſtrils, the lamellæ of the oſſa ſpongioſa and the ſinuſes, are lined by a thick and very vaſcular membrane, which, though not unknown to the ancients, was firſt well deſcribed by Schneider *, and is therefore now commonly named *membrana pituitaria Schneideri*. This membrane is truly the organ of ſmelling; but its real ſtructure does not yet ſeem to be perfectly underſtood. It appears to be a continuation of the cuticle, which lines the inner ſurface of the mouth. In ſome parts of the noſe it is ſmooth and firm, and in others it is looſe and ſpongy. It is conſtantly moiſtened by a mucous ſecretion; the finer parts of which are carried off by the air we breathe, and the remainder, by being retained in the ſinuſes, acquires conſiderable conſiſtence. The manner in which this mucus is ſecreted has not yet been ſatisfactorily aſcertained; but it ſeems to be by means of mucous follicles.

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* *De Catarrho*, iii.

Its arteries are branches of the internal maxillary and internal carotid. Its veins empty themſelves into the internal jugulars. The firſt pair of nerves, the olfactory, are ſpread over every part of it, and it likewiſe receives branches from the fifth pair.

After what has been ſaid of the pituitary membrane, it will not be difficult to conceive how the air we draw in at the noſtrils, being impregnated with the effluvia of bodies, excites in us that kind of ſenſation we call *ſmelling*. As theſe effluvia, from their being exceedingly light and volatile, cannot be capable in a ſmall quantity of making any great impreſſion on the extremities of the olfactory nerves, it was neceſſary to give conſiderable extent to the pituitary membrane, that by this means a greater number of odoriferous particles might be admitted at the ſame time. When we wiſh to take in much of the effluvia of any thing, we naturally cloſe the mouth, that all the air we inſpire may paſs through the noſtrils; and at the ſame time, by means of the muſcles of the noſe, the noſtrils are dilated, and a greater quantity of air is drawn into them.

In many quadrupeds, the ſenſe of ſmelling is much more extenſive and delicate than it is in the human ſubject; and in the human ſubject it ſeems to be more perfect the leſs it is vitiated by a variety of ſmells. It is not always in the ſame ſtate of perfection, being naturally affected by every change of the pituitary membrane, and of the lymph with which that membrane is moiſtened.

Sect. IV. *Of Hearing.*

144 Before we undertake to explain the manner in which we are enabled to receive the impreſſions of ſound, it will be neceſſary to deſcribe the *ear*, which is the *organ of hearing*. It is commonly diſtinguiſhed into external and internal. The former of theſe diviſions includes all that we are able to diſcover without diſſection, and the meatus auditorius, as far as the tympanum; and the latter, all the other parts of the ear.

The *external ear* is a cartilaginous funnel, covered by the common integuments, and attached, by means of its ligaments and muſcles, to the temporal bone.

Although

(u) Malpighi's deſcription of the papillæ, which has been copied by many anatomical writers, ſeems to have been taken chiefly from the tongues of ſheep.

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Although capable only of a very obſcure motion, it is found to have ſeveral muſcles. Different parts of it are diſtinguiſhed by different names; all its cartilaginous part is called *ala* or *wing*, to diſtinguiſh it from the ſoft and pendent part below, called the *lobe*. Its outer circle or border is called *helix*, and the ſemicircle within this, *antihelix*. The moveable cartilage placed immediately before the meatus auditorius, which it may be made to cloſe exactly, is named *tragus*; and an eminence oppoſite to this, at the extremity of the antihelix, is called *antitragus*. The concha is a conſiderable cavity formed by the extremities of the helix and antihelix. The meatus auditorius, which at its opening is cartilaginous, is lined with a very thin membrane, which is a continuation of the cuticle from the ſurface of the ear.

In this canal we find a yellow wax, which is ſecreted by a number of minute glands or follicles, each of which has an excretory duct. This ſecretion, which is at firſt of an oily conſiſtence, defends the membrane of the tympanum from the injuries of the air: and, by its bitterneſs, prevents minute inſects from entering into the ear. But when from neglect or diſeaſe it accumulates in too great a quantity, it ſometimes occaſions deafneſs. The inner extremity of the meatus is cloſed by a very thin tranſparent membrane, the membrana tympani, which is ſet in a bony circle like the head of a drum. In the laſt century Rivinus, profeſſor at Leipſic, fancied he had diſcovered a hole in this membrane, ſurrounded by a ſphincter, and affording a paſſage to the air, between the external and internal ear. Cowper, Heiſter, and ſome other anatomiſts, have admitted this ſuppoſed foramen, which certainly does not exiſt. Whenever there is any opening in the membrana tympani, it may be conſidered as accidental. Under the membrana tympani runs a branch of the fifth pair of nerves, called *chorda tympani*; and beyond this membrane is the cavity of the tympanum, which is about ſeven or eight lines wide, and half ſo many in depth; it is ſemiſpherical, and everywhere lined by a very fine membrane. There are four openings to be obſerved in this cavity. It communicates with the mouth by means of the Euſtachian tube. This canal, which is in part bony and in part cartilaginous, begins by a very narrow opening at the anterior and almoſt ſuperior part of the tympanum, increaſing in ſize as it advances towards the palate of the mouth, where it terminates by an oval opening. This tube is everywhere lined by the ſame membrane that covers the inſide of the mouth. The real uſe of this canal does not ſeem to have been hitherto ſatisfactorily aſcertained; but ſound would ſeem to be conveyed through it to the membrana tympani, deaf perſons being often obſerved to liſten attentively with their mouths open. Oppoſite to this is a minute paſſage, which leads to the ſinuoſities of the maſtoid proceſs; and the other two openings, which are in the internal proceſs of the os petroſum, are the feneſtra ovalis, and feneſtra rotunda, both of which are covered by a very fine membrane.

There are three diſtinct bones in the cavity of the tympanum; and theſe are the malleus, incus, and ſtapes. Beſides theſe there is a fourth, which is the *os orbiculare*, conſidered by ſome anatomiſts as a proceſs of the ſtapes, which is neceſſarily broken off by the violence we are obliged to uſe in getting at theſe bones; but when accurately conſidered, it ſeems to be a diſtinct bone.

The *malleus* is ſuppoſed to reſemble a hammer, being larger at one extremity, which is its head, than it is at the other, which is its handle. The latter is attached to the membrana tympani, and the head of the bone is articulated with the incus.

The *incus*, as it is called from its ſhape, though it ſeems to have leſs reſemblance to an anvil than to one of the dentes molares with its roots widely ſeparated from each other, is diſtinguiſhed into its body and its legs. One of its legs is placed at the entry of the canal which leads to the maſtoid proceſs; and the other, which is ſomewhat longer, is articulated with the ſtapes, or rather with the os orbiculare, which is placed between them.

The third bone is very properly named *ſtapes*, being perfectly ſhaped like a ſtirrup. Its baſis is fixed into the feneſtra ovalis, and its upper part is articulated with the os orbiculare. What is called the *feneſtra rotunda*, though perhaps improperly, as it is more oval than round, is obſerved a little above the other, in an eminence formed by the os petroſum, and is cloſed by a continuation of the membrane that lines the inner ſurface of the tympanum. The ſtapes and malleus are each of them furniſhed with a little muſcle, the ſtapedeus and tenſor tympani. The firſt of theſe, which is the ſmalleſt in the body, ariſes from a little cavern in the poſterior and upper part of the cavity of the tympanum; and its tendon, after paſſing through a hole in the ſame cavern, is inſerted at the back part of the head of the ſtapes. This muſcle, by drawing the ſtapes obliquely upwards, aſſiſts in ſtretching the membrana tympani.

The tenſor tympani (x), or internus mallei as it is called by ſome writers, ariſes from the cartilaginous extremity of the Euſtachian tube, and is inſerted into the back part of the handle of the malleus, which it ſerves to pull inwards, and of courſe helps to ſtretch the membrana tympani.

The labyrinth is the only part of the ear which remains to be deſcribed. It is ſituated in the os petroſum, and is ſeparated from the tympanum by a partition which is everywhere bony, except at the two feneſtræ. It is compoſed of three parts; and theſe are the veſtibulum, the ſemicircular canals, and the cochlea.

The *veſtibulum* is an irregular cavity, much ſmaller than the tympanum, ſituated nearly in the centre of the os petroſum, between the tympanum, the cochlea, and the ſemicircular canals. It is open on the ſide of the tympanum by means of the feneſtra ovalis, and communicates with the upper portion of the cochlea by an oblong

(x) Some anatomiſts deſcribe three muſcles of the malleus; but only this one ſeems to deſerve the name of muſcle; what are called the *externus* and *obliquus mallei* ſeeming to be ligaments rather than muſcles.

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oblong foramen, which is under the feneſtra ovalis, from which it is ſeparated only by a very thin partition.

Each of the three *ſemicircular canals* forms about half a circle of nearly a line in diameter, and running each in a different direction, they are diſtinguiſhed into *vertical*, *oblique*, and *horizontal*. Theſe three canals open by both their extremities into the veſtibulum; but the vertical and the oblique being united together at one of their extremities, there are only five orifices to be ſeen in the veſtibulum.

The *cochlea* is a canal which takes a ſpiral courſe, not unlike the ſhell of a ſnail. From its baſis to its apex it makes two turns and a half; and is divided into two canals by a very thin lamina or ſeptum, which is in part bony and in part membranous, in ſuch a manner that theſe two canals only communicate with each other at the point. One of them opens into the veſtibulum, and the other is covered by the membrane that cloſes the feneſtra rotunda. The bony lamella which ſeparates the two canals is exceedingly thin, and fills about two-thirds of the diameter of the canal. The reſt of the ſeptum is compoſed of a moſt delicate membrane, which lines the whole inner ſurface of the cochlea, and ſeems to form this diviſion in the ſame manner as the two membranous bags of the pleura, by being applied to each other, form the mediaſtinum.

Every part of the labyrinth is furniſhed with a very delicate perioſteum, and filled with a watery fluid, ſecreted as in other cavities. This fluid tranſmits to the nerves the vibrations it receives from the membrane cloſing the feneſtra rotunda, and from the baſis of the ſtapes, where it reſts on the feneſtrum ovale. When this fluid is collected in too great a quantity, or is compreſſed by the ſtapes, it is ſuppoſed to eſcape through two minute canals or aqueducts, lately deſcribed by Dr Cotunni *, an ingenious phyſician at Naples. One of theſe aqueducts opens into the bottom of the veſtibulum, and the other into the cochlea, near the feneſtra rotunda. They both paſs through the os petroſum, and communicate with the cavity of the cranium where the fluid that paſſes through them is abſorbed; and they are lined by a membrane which is ſuppoſed to be a production of the dura mater.

* *De Aquæductibus Auris Humanæ Internæ*, 8vo. 1760.

The arteries of the external ear come from the temporal and other branches of the external carotid, and its veins paſs into the jugular. The internal ear receives branches of arteries from the baſilary and carotids, and its veins empty themſelves into the ſinuſes of the dura mater, and into the internal jugular.

The portio mollis of the ſeventh pair is diſtributed through the cochlea, the veſtibulum, and the ſemicircular canals; and the portio dura ſends off a branch to the tympanum, and other branches to the external ear and parts near it.

The *ſenſe of hearing*, in producing which all the parts we have deſcribed aſſiſt, is occaſioned by a certain modulation of the air collected by the funnel-like ſhape of the external ear, and conveyed through the meatus auditorius to the membrana tympani. That ſound is propagated by means of the air, is very eaſily proved by ringing a bell under the receiver of an air pump; the ſound it affords being found to diminiſh gradually as the air becomes exhauſted, till at length it ceaſes to be heard at all. Sound moves through the air with infinite velocity; but the degree of its motion ſeems to depend on the ſtate of the air, as it conſtantly moves faſter in a denſe and dry, than it does in a moiſt and rarefied air.

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That the air vibrating on the membrana tympani communicates its vibration to the different parts of the labyrinth, and by means of the fluid contained in this cavity affects the auditory nerve ſo as to produce ſound, ſeems to be very probable; but the ſituation, the minuteneſs, and the variety of the parts which compoſe the ear, do not permit much to be advanced with certainty concerning their mode of action.

Some of theſe parts ſeem to conſtitute the immediate organ of hearing, and theſe are all the parts of the veſtibulum: but there are others which ſeem intended for the perfection of this ſenſe, without being abſolutely eſſential to it. It has happened, for inſtance, that the membrana tympani, and the little bones of the ear, have been deſtroyed by diſeaſe, without depriving the patient of the ſenſe of hearing (y).

Sound is more or leſs loud in proportion to the ſtrength of the vibration; and the variety of ſounds ſeems to depend on the difference of this vibration; for the more quick and frequent it is, the more acute will be the ſound, and *vice verſa*.

Before we conclude this article, it will be right to explain certain phenomena, which will be found to have a relation to the organ of hearing.

Every body has, in conſequence of particular ſounds, occaſionally felt that diſagreeable ſenſation which is uſually called *ſetting the teeth on edge*: and the cauſe of this ſenſation may be traced to the communication which the portio dura of the auditory nerve has with the branches of the fifth pair that are diſtributed to the teeth, being probably occaſioned by the violent tremor produced in the membrana tympani by theſe very acute ſounds. Upon the ſame principle we may explain the ſtrong idea of ſound which a perſon has who holds a vibrating ſtring between his teeth.

The humming which is ſometimes perceived in the ear, without any exterior cauſe, may be occaſioned either by an increaſed action of the arteries in the ears, or by convulſive contractions of the muſcles of the malleus and ſtapes, affecting the auditory nerve in ſuch a manner as to produce the idea of ſound. An ingenious philoſophical writer * has lately diſcovered, that there are ſounds liable to be excited in the ear by irritation, and without any aſſiſtance from the vibrations of the air.

* Elliot's *Philoſophical Obſervations on the Senſes of Vision and Hearing*, 8vo.

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(y) This obſervation has led to a ſuppoſition, that a perforation of this membrane may in ſome caſes of deafneſs be uſeful; and Mr Cheſelden relates, that ſome years ago, a malefactor was pardoned, on condition that he ſhould ſubmit to this operation; but the public clamour raiſed againſt it was ſo great, that it was thought right not to perform it.

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Sect. V. *Of Viſion**.

* See *Optics*, p. 147.

The eyes, which conſtitute the organ of viſion, are ſituated in two bony cavities named *orbits*, where they are ſurrounded by ſeveral parts, which are either intended to protect them from external injury, or to aſſiſt in their motion.

The globe of the eye is immediately covered by two eyelids or palpebræ, which are compoſed of muſcular fibres, covered by the common integuments, and lined by a very fine and ſmooth membrane, which is from thence extended over part of the globe of the eye, and is called *tunica conjunctiva*. Each eyelid is cartilaginous at its edge; and this border, which is called *tarſus*, is furniſhed with a row of hairs named *cilia* or *eyelaſhes*.

The cilia ſerve to protect the eye from inſects and minute bodies floating in the air, and likewiſe to moderate the action of the rays of light in their paſſage to the retina. At the roots of theſe hairs there are ſebaceous follicles, firſt noticed by Meibomius, which diſcharge a glutinous liniment. Sometimes the fluid they ſecrete has too much viſcidity, and the eyelids become glued to each other.

The upper border of the orbit is covered by the eyebrows or ſupercilia, which by means of their two muſcles are capable of being brought towards each other, or of being carried upwards. They have been conſidered as ſerving to protect the eyes, but they are probably intended more for ornament than utility (z).

The orbits, in which the eyes are placed, are furniſhed with a good deal of fat, which affords a ſoft bed on which the eye performs its ſeveral motions. The inner angle of each orbit, or that part of it which is near the noſe, is called *canthus major*, or the *great angle*; and the outer angle, which is on the oppoſite ſide of the eye, is the *canthus minor*, or *little angle*.

The little reddiſh body which we obſerve in the great angle of the eyelids, and which is called *caruncula lachrymalis*, is ſuppoſed to be of a glandular ſtructure, and, like the follicles of the eyelids, to ſecrete an oily humour. But its ſtructure and uſe do not ſeem to have been hitherto accurately determined. The ſurface of the eye is conſtantly moiſtened by a very fine limpid fluid called the *tears*, which is chiefly, and perhaps wholly, derived from a large gland of the conglomerate kind, ſituated in a ſmall depreſſion of the os frontis near the outer angle of the eye. Its excretory ducts pierce the tunica conjunctiva juſt above the cartilaginous borders of the upper eyelids. When the tears were ſuppoſed to be ſecreted by the caruncle, this gland was called *glandula innominata*; but now that its ſtructure and uſes are aſcertained, it very properly has the name of *glandula lachrymalis*. The tears poured out by the ducts of this gland are, in a natural and healthy ſtate, inceſſantly ſpread over the ſurface of the eye, to keep it clear and tranſparent by means of the eyelids, and as conſtantly paſs out at the oppoſite corner of the eye or inner angle, through two minute orifices, the puncta lachrymalia (a); being determined into theſe little openings by a reduplication of the tunica conjunctiva, ſhaped like a creſcent, the two points of which anſwer to the puncta. This reduplication is named *membrana* or *valvula ſemilunaris*. Each of theſe puncta is the beginning of a ſmall excretory tube, through which the tears paſs into a little pouch or reſervoir, the ſacculus lachrymalis, which lies in an excavation formed partly by the naſal proceſs of the os maxillare ſuperius, and partly by the os unguis. The lower part of this ſac forms a duct called the *ductus ad nares*, which is continued through a bony channel, and opens into the noſe, through which the tears are occaſionally diſcharged (b).

The motions of the eye are performed by ſix muſcles; four of which are ſtraight and two oblique. The ſtraight muſcles are diſtinguiſhed by the names of *elevator*, *depreſſor*, *adductor*, and *abductor*, from their ſeveral uſes in elevating and depreſſing the eye, drawing it towards the noſe, or carrying it from the noſe towards the temple. All theſe four muſcles ariſe from the bottom of the orbit, and are inſerted by flat tendons into the globe of the eye. The oblique muſcles are intended for the more compound motions of the eye. The firſt of theſe muſcles, the obliquus ſuperior, does not, like the other four muſcles we have deſcribed, ariſe from the bottom of the orbit, but from the edge of the foramen that tranſmits the optic nerve, which ſeparates the origin of this muſcle from that of the others. From this beginning it paſſes in a ſtraight line towards a very ſmall cartilaginous ring, the ſituation of which is marked in the ſkeleton by a little hollow in the internal orbitar proceſſes of the os frontis. The tendon of the muſcle, after paſſing through this ring, is inſerted into the upper part of the globe of the eye, which it ſerves to draw forwards, at the ſame time turning the pupil downwards.

The obliquus inferior ariſes from the edge of the orbit, under the opening of the ductus lachrymalis; and is inſerted ſomewhat poſteriorly into the outer ſide of the globe, ſerving to draw the eye forwards and turn the pupil upwards. When either of theſe two muſcles act ſeparately, the eye is moved on its axis; but when they act together, it is compreſſed both above and below. The eye itſelf, which is now to be deſcribed, with its tunics, humours, and component parts, is nearly of a ſpherical figure. Of its tunics, the conjunctiva has been already deſcribed as a partial covering, reflected from the inner ſurface of the eyelids over the anterior portion of the eye. What has been

(z) It is obſervable, that the eyebrows are peculiar to the human ſpecies.

(a) It ſometimes happens, that this very pellucid fluid, which moiſtens the eye, being poured out through the excretory ducts of the lachrymal gland faſter than it can be carried off through the puncta, trickles down the cheek, and is then ſtrictly and properly called *tears*.

(b) When the ductus ad nares becomes obſtructed in conſequence of diſeaſe, the tears are no longer able to paſs into the noſtrils; the ſacculus lachrymalis becomes diſtended; and inflammation, and ſometimes ulceration, taking place, conſtitute the diſeaſe called *fiſtula lachrymalis*.

named *alluginea* cannot properly be conſidered as a coat of the eye, being in fact nothing more than the tendons of the ſtraight muſcles ſpread over ſome parts of the ſclerotica.

The immediate tunics of the eye, which are to be demonſtrated when its partial coverings, and all the other parts with which it is ſurrounded, are removed, are the ſclerotica, cornea, choroides, and retina.

The *ſclerotica*, which is the exterior coat, is everywhere white and opaque, and is joined at its anterior edge to another, which has more convexity than any other part of the globe, and being exceedingly tranſparent is called *cornea* (c). Theſe two parts are perfectly different in their ſtructure; ſo that ſome anatomiſts ſuppoſe them to be as diſtinct from each other as the glaſs of a watch is from the caſe into which it is fixed. The ſclerotica is of a compact fibrous ſtructure; the cornea, on the other hand, is compoſed of a great number of laminæ united by cellular membrane. By macerating them in boiling water, they do not ſeparate from each other, as ſome writers have aſſerted; but the cornea ſoon ſoftens, and becomes of a glutinous conſiſtence.

The ancients ſuppoſed the ſclerotica to be a continuation of the dura mater. Morgagni and ſome other modern writers are of the ſame opinion; but this point is diſputed by Winſlow, Haller, Zinn, and others. The truth ſeems to be, that the ſclerotica, though not a production of the dura mater, adheres intimately to that membrane.

The *choroides* is ſo called becauſe it is furniſhed with a great number of veſſels. It has likewiſe been named *uvea*, on account of its reſemblance to a grape. Many modern anatomical writers have conſidered it as a production of the pia mater. This was likewiſe the opinion of the ancients; but the ſtrength and thickneſs of the choroides, when compared with the delicate ſtructure of the pia mater, are ſufficient proofs of their being two diſtinct membranes.

The choroides has of late generally been deſcribed as conſiſting of two laminæ; the innermoſt of which has been named after Ruyſch, who firſt deſcribed it. It is certain, however, that Ruyſch's diſtinction is ill founded, at leaſt with reſpect to the human eye, in which we are unable to demonſtrate any ſuch ſtructure, although the tunica choroides of ſheep and ſome other quadrupeds may eaſily be ſeparated into two layers.

The choroides adheres intimately to the ſclerotica round the edge of the cornea; and at the place of this union we may obſerve a little whitiſh areola, named *ligamentum ciliare*, though it is not of a ligamentous nature.

They who ſuppoſe the choroides to be compoſed of two laminæ, deſcribe the external one as terminating in the ligamentum ciliare, and the internal one as extending farther to form the iris, which is the circle we are able to diſtinguiſh through the cornea; but this part is of a very different ſtructure from the choroides; ſo that ſome late writers have perhaps not improperly conſidered the iris as a diſtinct membrane. It derives its name from the variety of its colours, and is perforated in its middle. This perforation, which is called the *pupil* or *ſight* of the eye, is cloſed in the fœtus by a very thin vaſcular membrane. This membrana pupillaris commonly diſappears about the ſeventh month.

On the under ſides of the iris, we obſerve many minute fibres, called *ciliary proceſſes*, which paſs in radii or parallel lines from the circumference to the centre. The contraction and dilatation of the pupil are ſuppoſed to depend on the action of theſe proceſſes. Some have conſidered them as muſcular, but they are not of an irritable nature; others have ſuppoſed them to be filaments of nerves; but their real ſtructure has never yet been clearly aſcertained.

Beſides theſe ciliary proceſſes, anatomiſts uſually ſpeak of the circular fibres of the iris, but no ſuch ſeem to exiſt.

The poſterior ſurface of the iris, the ciliary proceſſes, and part of the tunica choroides, are covered with a black mucus for the purpoſes of accurate and diſtinct viſion; but the manner in which it is ſecreted, has not been determined.

Immediately under the tunica choroides we find the third and inner coat, called the *retina*, which ſeems to be merely an expanſion of the pulpy ſubſtance of the optic nerve, extending to the borders of the cryſtalline humour.

The greateſt part of the globe of the eye, within theſe ſeveral tunics, is filled by a very tranſparent and gelatinous humour of conſiderable conſiſtence, which from its ſuppoſed reſemblance to fuſed glaſs, is called the *vitreous humour*. It is inveſted by a very fine and delicate membrane, called *tunica vitrea*, and ſometimes *arachnoides*.—It is ſuppoſed to be compoſed of two laminæ; one of which dips into its ſubſtance, and by dividing the humour into cells adds to its firmneſs. The fore part of the vitreous humour is a little hollowed, to receive a very white and tranſparent ſubſtance of a firm texture, and of a lenticular and ſomewhat convex ſhape, named the *cryſtalline humour*. It is included in a capſula, which ſeems to be formed by a ſeparation of the two laminæ of the tunica vitrea.

The fore part of the eye is filled by a very thin and tranſparent fluid, named the *aqueous humour*, which occupies all the ſpace between the cryſtalline and the prominent cornea.—That part of the choroides which is called the *iris*, and which comes forward to form the pupil, appears to be ſuſpended as it were in this humour, and has occaſioned this portion of the eye to be diſtinguiſhed into two parts. One of theſe, which is the little ſpace between the anterior ſurface of the cryſtalline and the iris, is called the *poſterior chamber*; and the other, which is the ſpace between the iris and the cornea, is called the *anterior chamber* of the eye (d).

Both

(c) Some writers, who have given the name of *cornea* to all this outer coat, have named what is here and moſt commonly called *ſclerotica*, *cornea opaca*; and its anterior and tranſparent portion, *cornea lucida*.

(d) We are aware that ſome anatomiſts, particularly Lieutaud, are of opinion, that the iris is everywhere in cloſe contact with the cryſtalline, and that it is of courſe right to ſpeak only of one chamber of the eye; but as this

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Both theſe ſpaces are completely filled with the aqueous humour (E).

The eye receives its arteries from the internal carotid, through the foramina optica; and its veins paſs through the foramina lacera, and empty themſelves into the lateral ſinuſes. Some of the ramifications of theſe veſſels appear on the inner ſurface of the iris, where they are ſeen to make very minute convolutions, which are ſufficiently remarkable to be diſtinguiſhed by the name of *circulus arterioſus*, though perhaps improperly, as they are chiefly branches of veins.

The optic nerve paſſes in at the poſterior part of the eye, in a conſiderable trunk, to be expanded for the purpoſes of viſion, of which it is now univerſally ſuppoſed to be the immediate ſeat. But Meſſrs Mariotte and Mery contended, that the choroides is the ſeat of this ſenſe; and the ancients ſuppoſed the cryſtalline to be ſo. Beſides the optic, the eye receives branches from the third, fourth, fifth, and ſixth pair of nerves.

The humours of the eye, together with the cornea, are calculated to refract and converge the rays of light in ſuch a manner as to form at the bottom of the eye a diſtinct image of the object we look at; and the point where the rays meet is called the *focus* of the eye. On the retina, as in a *camera obſcura*, the object is painted in an inverted poſition; and it is only by habit that we are enabled to judge of its true ſituation, and likewiſe of its diſtance and magnitude. To a young gentleman who was born blind, and who was couched by Mr Cheſelden, every object (as he expreſſed himſelf) ſeemed to touch his eyes, as what he felt did his ſkin; and he thought no objects ſo agreeable as thoſe which were ſmooth and regular, although for ſome time he could form no judgment of their ſhape, or gueſs what it was in any of them that was pleaſing to him.

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In order to paint objects diſtinctly on the retina, the cornea is required to have ſuch a degree of convexity, that the rays of light may be collected at a certain point, ſo as to terminate exactly on the retina.—If the cornea is too prominent, the rays, by diverging too ſoon, will be united before they reach the retina, as is the caſe with near-ſighted people or *myopes*; and on the contrary, if it is not ſufficiently convex, the rays will not be perfectly united when they reach the back part of the eye; and this happens to long-ſighted people or *preſbi*, being found conſtantly to take place as we approach to old age, when the eye gradually flattens (F). Theſe defects are to be ſupplied by means of glaſſes. He who has too prominent an eye, will find his viſion improved by means of a concave glaſs; and upon the ſame principles, a convex glaſs will be found uſeful to a perſon whoſe eye is naturally too flat.

EXPLANATION OF PLATE XXXII.

FIG. 1. ſhows the Lachrymal Canals, after the Common Teguments and Bones have been cut away.

a, The lachrymal gland. b, The two puncta lachrymalia, from which the two lachrymal canals proceed to c, the lachrymal ſac. d, The large lachrymal duct. e, Its opening into the noſe. f, The caruncula lachrymalis. g, The eyeball.

FIG. 2. An interior View of the Coats and Humours of the Eye.

aaaa, The tunica ſclerotica cut in four angles, and turned back. bbbb, The tunica choroides adhering to the inſide of the ſclerotica, and the ciliary veſſels are ſeen paſſing over—cc, The retina, which covers the vitreous humour. dd, The ciliary proceſſes, which were continued from the choroid coat. ee, The iris. f, The pupil.

FIG. 3. ſhows the Optic Nerves, and Muſcles of the Eye.

aa, The two optic nerves before they meet. b, The two optic nerves conjoined. c, The right optic nerve. d, Muſculus attollens palpebræ ſuperioris. e, Attollens oculi. f, Abductor. gg, Obliquus ſuperior, or trochlearis. h, Adductor. i, The eyeball.

FIG. 4. ſhows the Eyeball with its Muſcles.

a, The optic nerve. b, Muſculus trochlearis. c, Part of the os frontis, to which the trochlea or pulley is fixed, through which,—d, The tendons of the trochlearis paſs. e, Attollens oculi. f, Adductor oculi. g, Abductor oculi. h, Obliquus inferior. i, Part of the ſuperior maxillary bone to which it is fixed. k, The eyeball.

FIG. 5. repreſents the Nerves and Muſcles of the Right Eye, after part of the Bones of the Orbit have been cut away.

A, The eyeball. B, The lachrymal gland. C, Muſculus abductor oculi. D, Attollens. E, Levator palpebræ ſuperioris. F, Depreſſor oculi. G, Adductor. H, Obliquus ſuperior, with its pulley. I, its inſertion into the ſclerotic coat. K, Part of the obliquus inferior. L, The anterior part of the os frontis cut.

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this does not appear to be the caſe, the ſituation of the iris and the two chambers of the eye are here deſcribed in the uſual way.

(E) When the cryſtalline becomes opaque, ſo as to prevent the paſſage of the rays of light to the retina, it conſtitutes what is called a *cataract*; and the operation of couching conſiſts in removing the diſeaſed cryſtalline from its bed in the vitreous humour. In this operation the cornea is perforated, and the aqueous humour eſcapes out of the eye, but it is conſtantly renewed again in a very ſhort time. The manner, however, in which it is ſecreted has not yet been determined.

(F) Upon this principle, they, who in their youth are near-ſighted, may expect to ſee better as they advance in life, as their eyes gradually become more flat.

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cut. M, The criſta galli of the ethmoid bone. N, The poſterior part of the ſphenoid bone. O, Tranſverſe ſpinous proceſs of the ſphenoid bone. P, The carotid artery, denuded where it paſſes through the bones. Q, The carotid artery within the cranium. R, The ocular artery.

Nerves.—aa, The optic nerve. b, The third pair.—c, Its joining with a branch of the firſt branch of the fifth pair, to form l, the lenticular ganglion,—which ſends off the ciliary nerves, d. ee, The fourth pair. f, The trunk of the fifth pair. g, The firſt branch of the fifth pair, named ophthalmic.—h, The frontal branch of it. i, Its ciliary branches, along with which the naſal twig is ſent to the noſe. k, Its branch to the lachrymal gland. l, The lenticular ganglion. m, The ſecond branch of the fifth pair, named ſuperior maxillary. n, The third branch of the fifth pair, named inferior maxillary. o, The ſixth pair of nerves,—which ſends off, p, the beginning of the great ſympathetic. q, The remainder of the ſixth pair, ſpent on c, the abductor oculi.

Fig. 6. repreſents the Head of a Youth, where the upper part of the Cranium is ſawed off,—to ſhow the Upper Part of the Brain, covered by the Pia Mater, the veſſels of which are minutely filled with wax.

AA, The cut edges of the upper part of the cranium. B, The two tables and intermediate diploë. BB, The two hemiſpheres of the cerebrum. CC, The inciſure made by the falx. D, Part of the tentorium cerebello ſuper expanſum. E, Part of the falx, which is fixed to the criſta galli.

Fig. 7. repreſents the parts of the External Ear, with the Parotid Gland and its Duct.

aa, The helix. b, The antihelix. c, The antitragus. d, The tragus. e, The lobe of the ear. f, The cavitas innominata. g, The ſcapha. h, The concha. ii, The parotid gland. k, A lymphatic gland, which is often found before the tragus. l, The duct of the parotid gland. m, Its opening into the mouth.

Of the Senſes.

Fig. 8. A View of the Poſterior Part of the External Ear, Meatus Auditorius, Tympanum, with its Small Bones, and Euſtachian tube of the Right Side.

a, The back part of the meatus, with the ſmall ceruminous glands. b, The incus. c, Malleus. d, The chorda tympani. e, Membrana tympani. f, The Euſtachian tube. g, Its mouth from the fauces.

Fig. 9. repreſents the Anterior Part of the Right External Ear, the Cavity of the Tympanum—its Small Bones, Cochlea, and Semicircular Canals.

a, The malleus. b, Incus with its long leg, reſting upon the ſtapes. c, Membrana tympani. d, e, The Euſtachian tube, covered by part of—ff, the muſculus circumflexus palati. 1, 2, 3, The three ſemicircular canals. 4, The veſtible. 5, The cochlea. 6, The portio mollis of the ſeventh pair of nerves.

Fig. 10. ſhows the Muſcles which compoſe the fleſhy ſubſtance of the Tongue.

aa, The tip of the tongue, with ſome of the papillæ minimæ. b, The root of the tongue. c, Part of the membrane of the tongue, which covered the epiglottis. dd, Part of the muſculus hyo-gloſſus. e, The lingualis. f, Genio-gloſſus. gg, Part of the ſtylo-gloſſus.

PART II.

COMPARATIVE ANATOMY.

HAVING fully examined and deſcribed the ſtructure of man, we are now to take a view of that of the inferior animals, and to conſider in what the reſt of animated nature differs from man.

145 Comparative anatomy was formerly, as we have ſhewn in the hiſtory, much more cultivated than that of the human body; but when the prejudices of bigotry and ignorance ſubſided, and allowed human diſſection to be more freely exerciſed, the ſtudy of this ſpecies of anatomy was almoſt entirely neglected. Of late, however, it has attracted the attention of ſeveral of the moſt eminent naturaliſts and anatomiſts, particularly of Monro, Hunter, Vicq d'Azyr, and Cuvier, from whoſe labours it has received conſiderable improvement, and has attained a degree of accuracy and an extent of application, which render it an object of inquiry highly intereſting to the philoſopher and the phyſician.

146 Many advantages are derived from the ſtudy of comparative anatomy. Firſt, It furniſhes us with a ſufficient knowledge of the ſeveral parts of animals, to prevent our being impoſed on by thoſe authors who have deſcribed and delineated many organs from brutes as belonging to the human body. That this is of importance, is evinced by examining the works of ſome of the earlieſt and greateſt maſters of anatomy, who, for want of human ſubjects, have often taken their deſcriptions from other animals; Galen is notoriouſly faulty in this reſpect, and the great Veſalius, though he juſtly reproves Galen, has fallen into the ſame error, as is plain from his delineations of the kidneys, the uterus, the muſcles of the eye, and other parts. Nor is antiquity only chargeable with this, ſince in Willis's *Anatomia Cerebri* (the plates of which were reviſed by that accurate anatomiſt Dr Lower) there are ſeveral of the figures taken from different brutes, eſpecially from the dog, beſides what he acknowledges for ſuch.

Secondly, It helps us to underſtand ſeveral paſſages in the ancient writers on medicine, eſpecially Hippocrates and Galen, who have taken many of their deſcriptions from brutes and reaſoned from them. 147

Thirdly, It affords one of the beſt aſſiſtants and moſt certain guides in the ſtudy of natural hiſtory; and the

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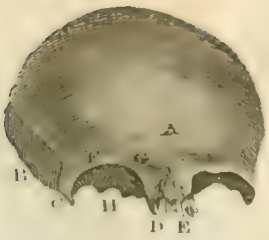

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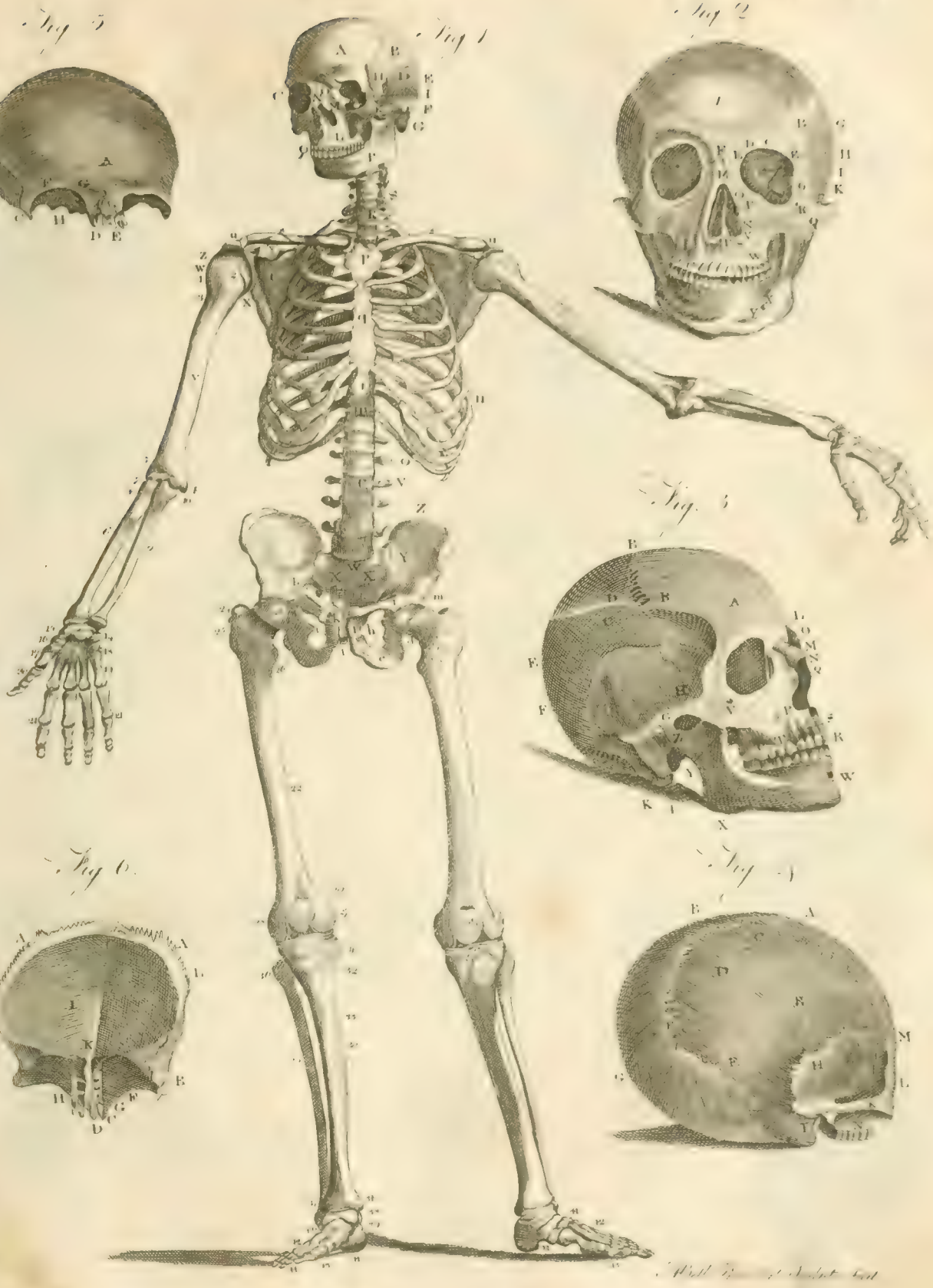

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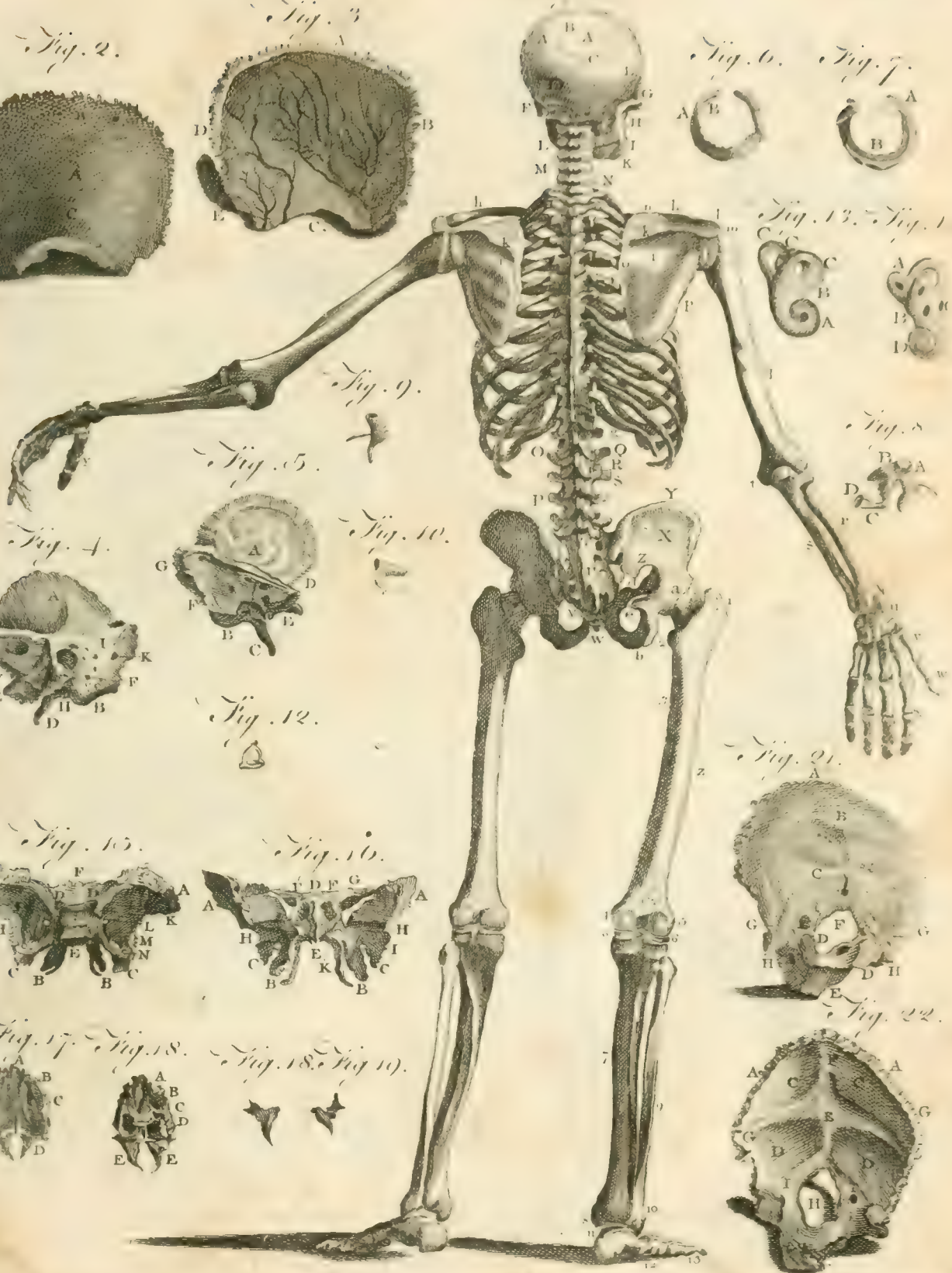

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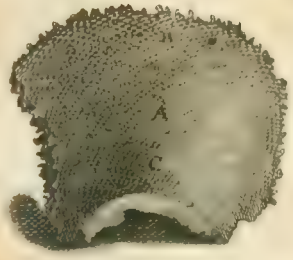

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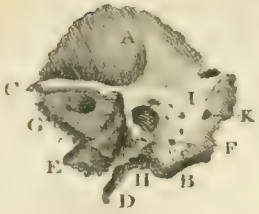

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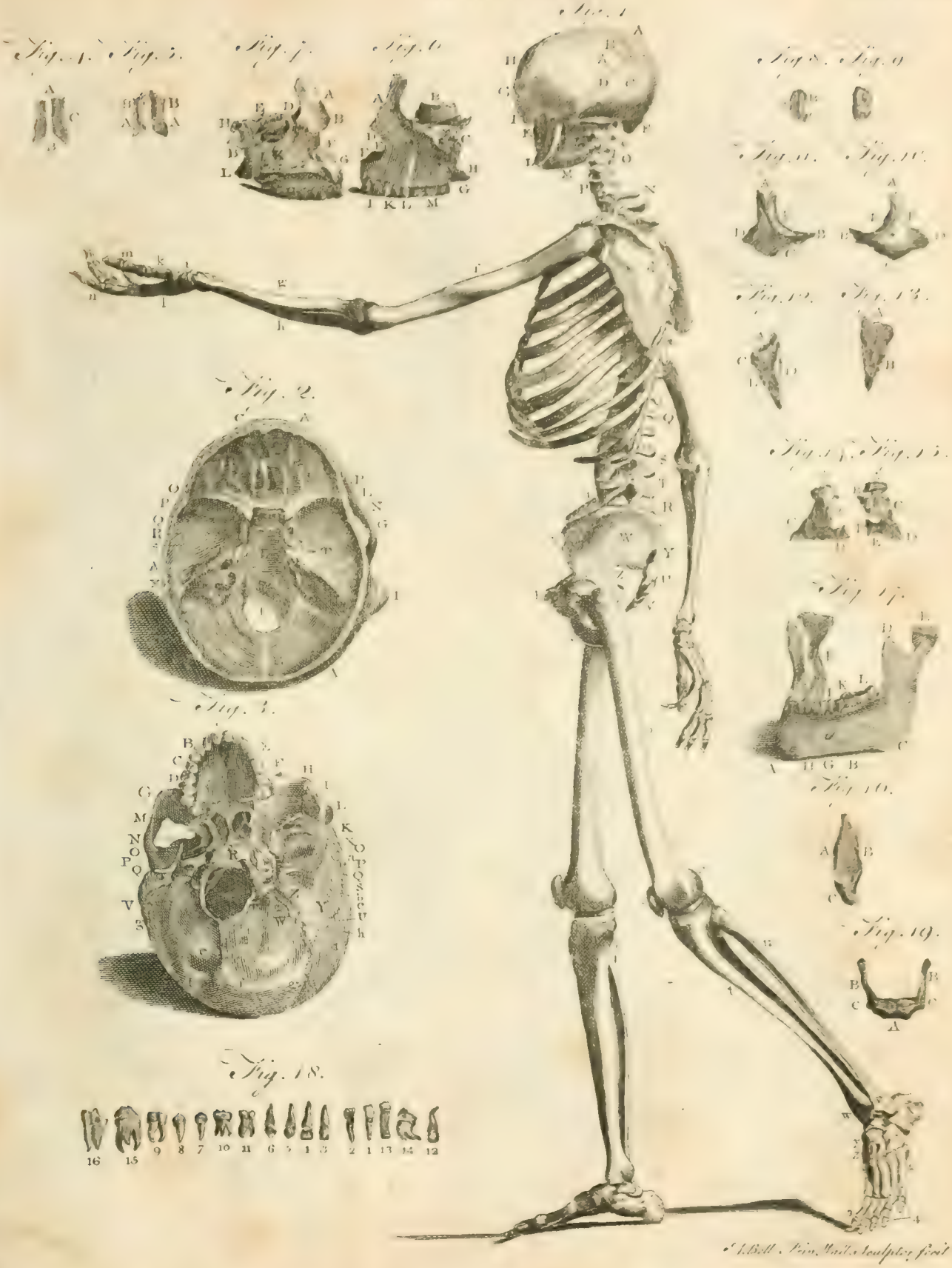
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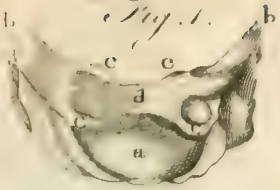

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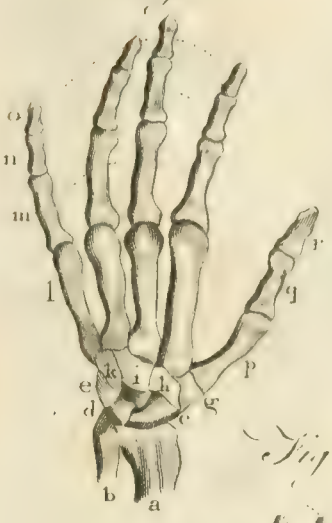

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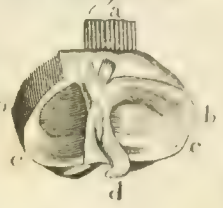

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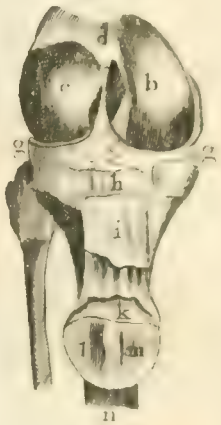

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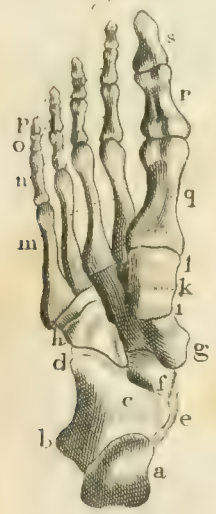

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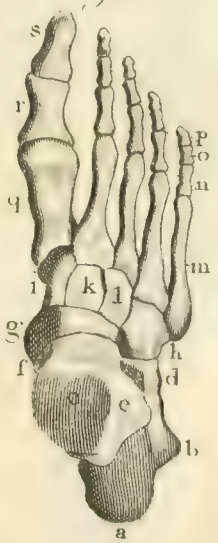

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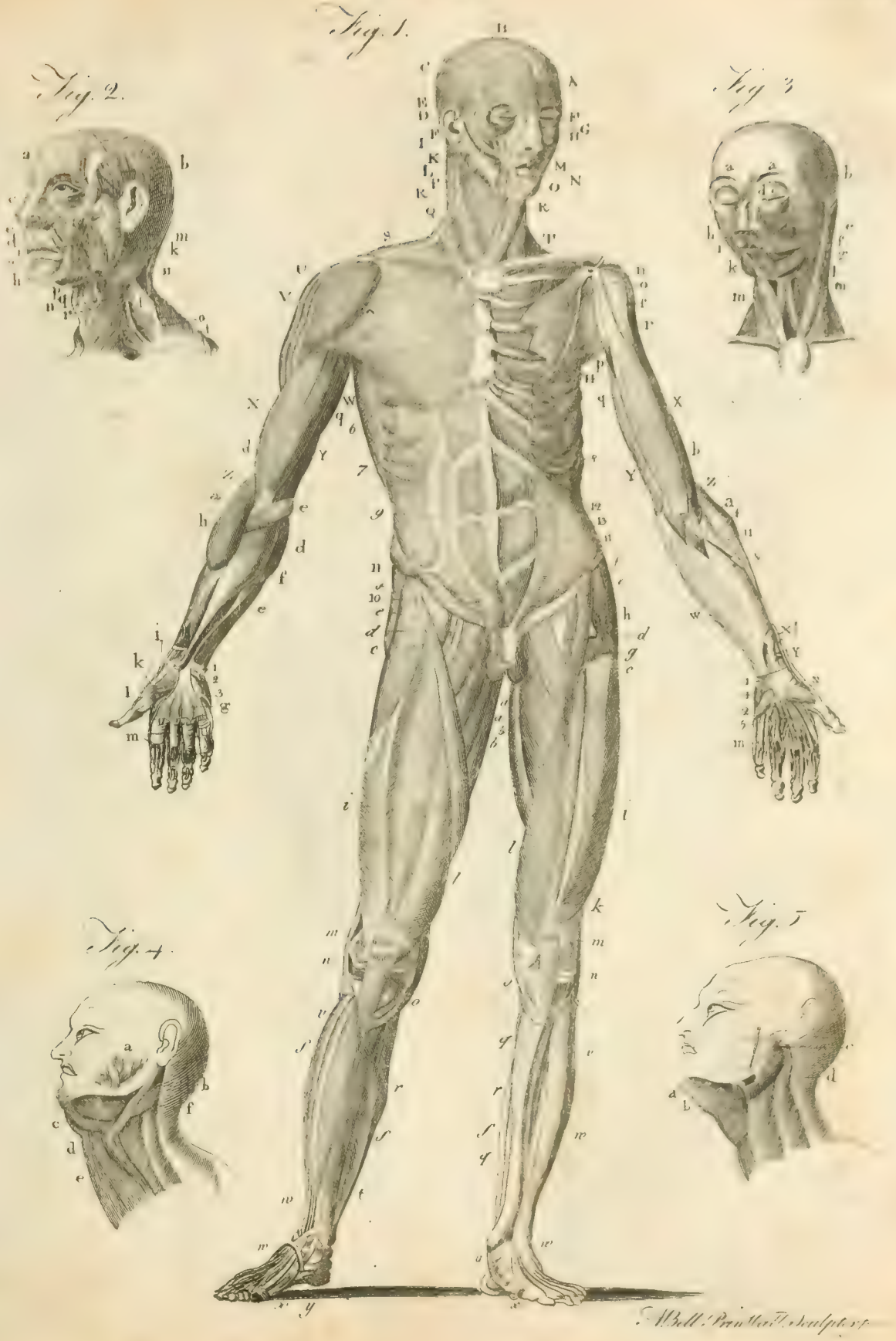
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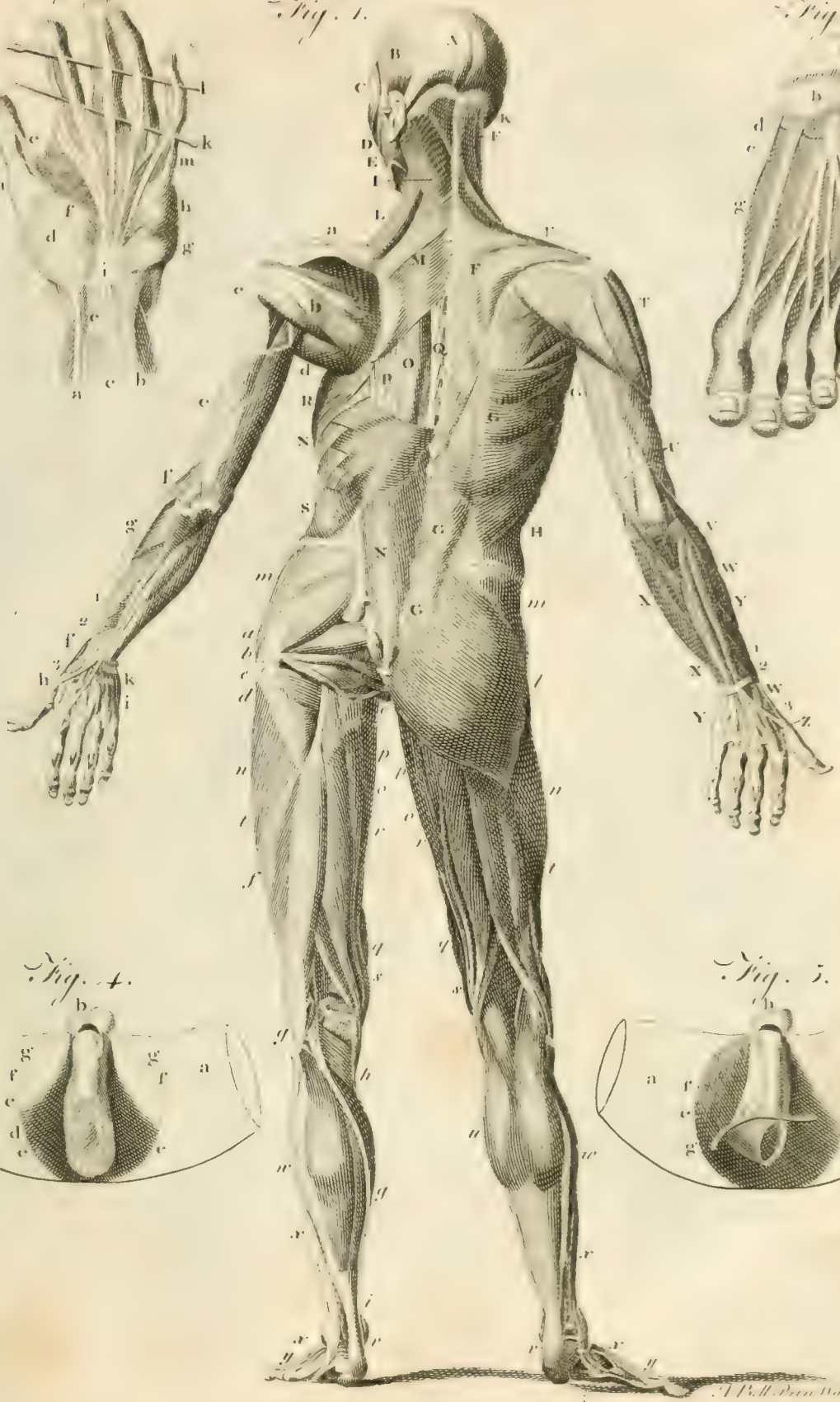

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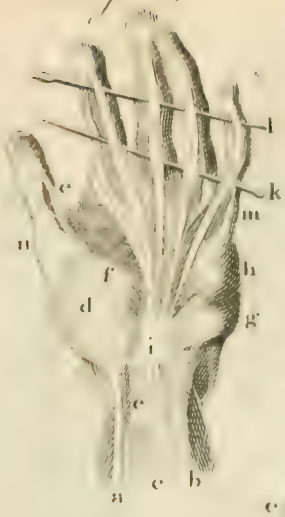

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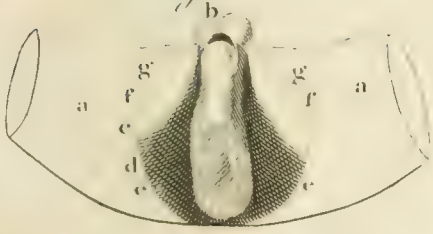

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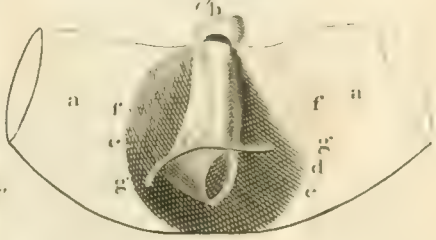

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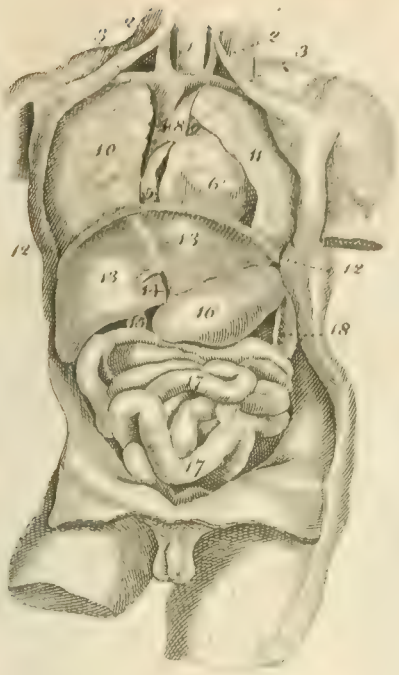

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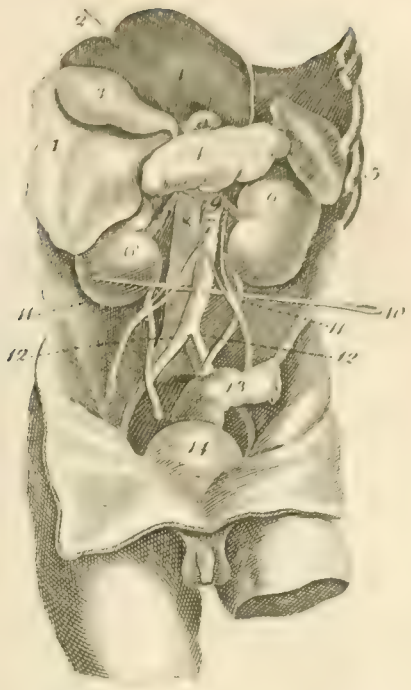

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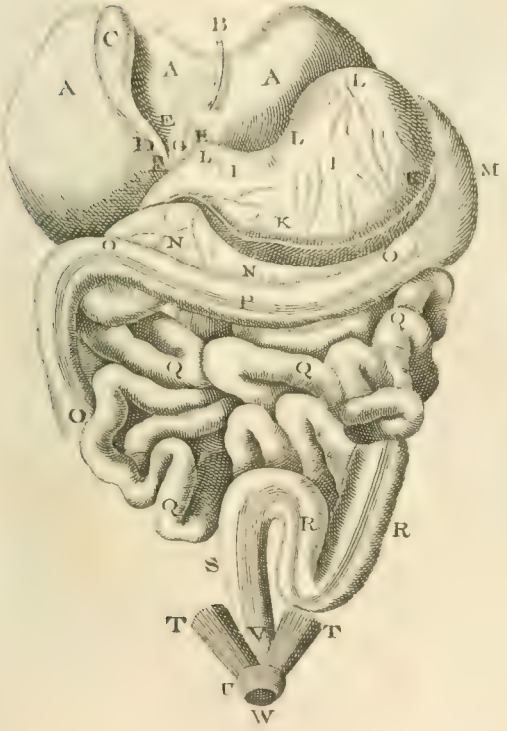

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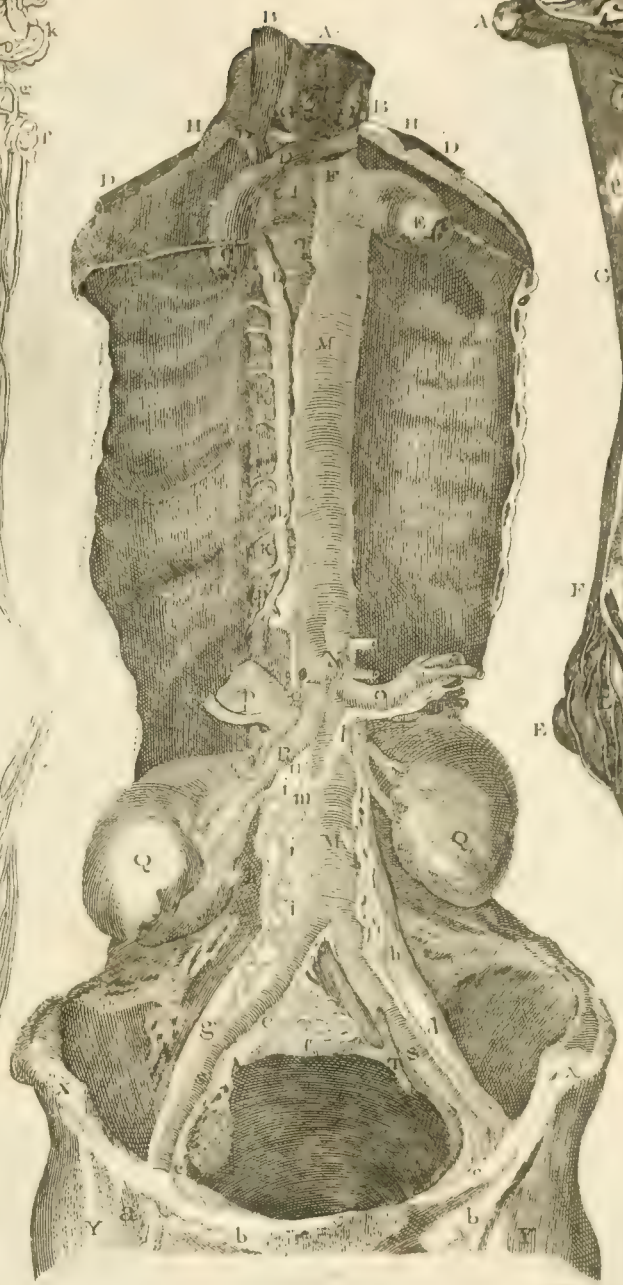

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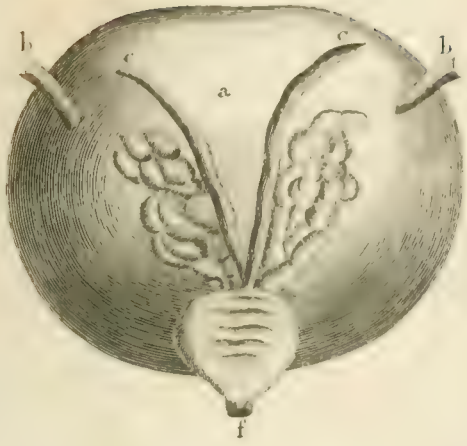

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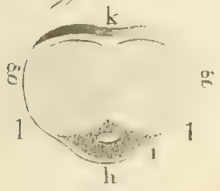

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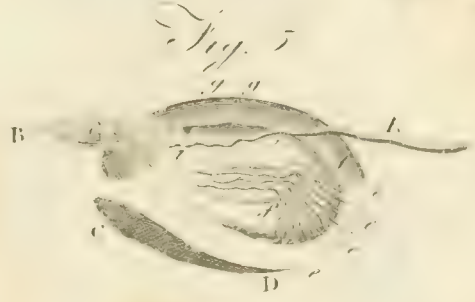

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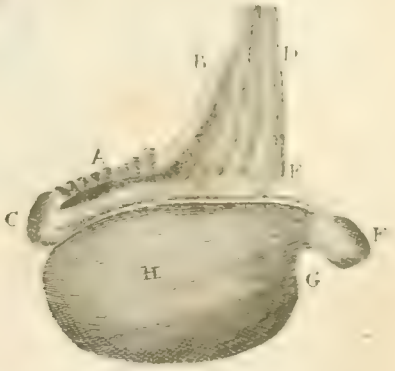
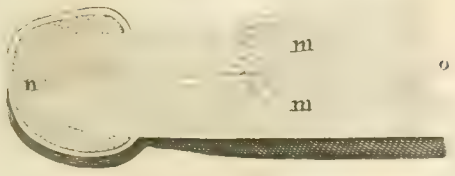


Fig. 3.



Pl. 29. Fig. Cut. Sculpsit fecit.

ANATOMY.

Plate XXX.

A Bell. Pinx. Mal. Sculptor fecit.

Fig. 1.

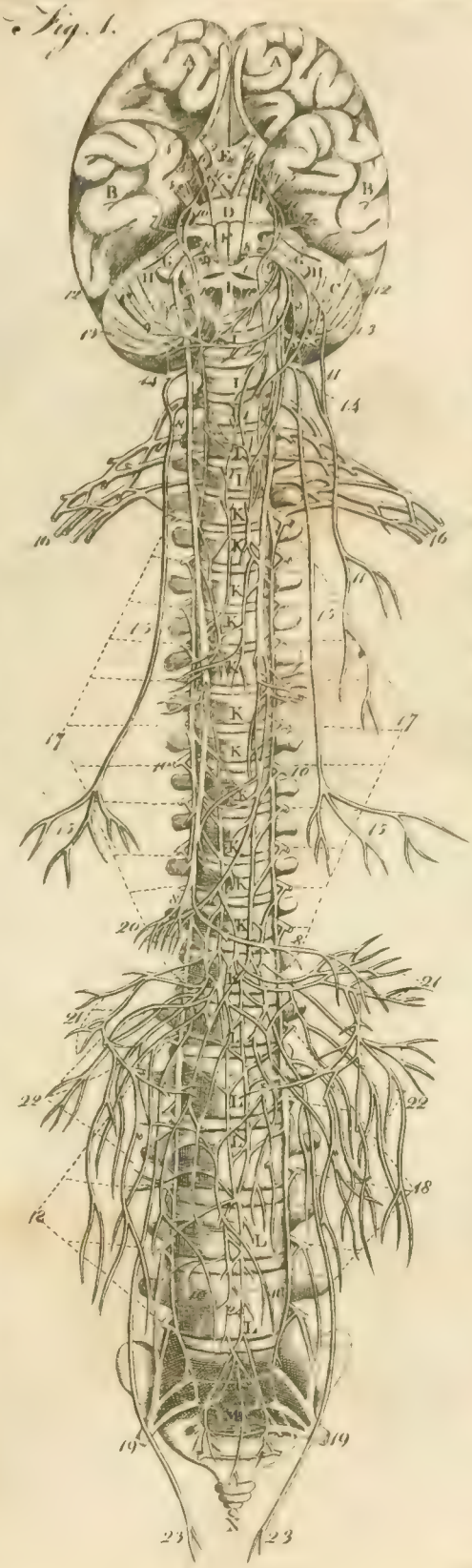


Fig. 2.

Fig. 3.

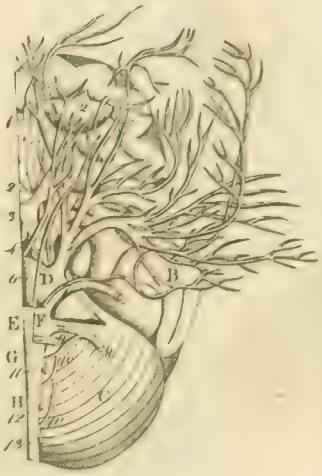


Fig. 4.

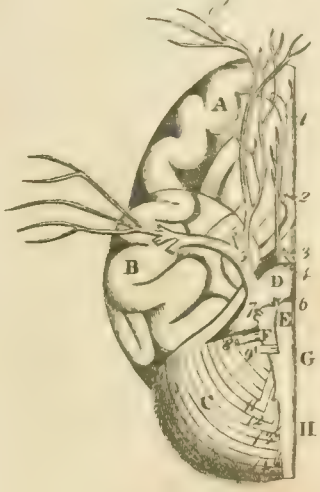
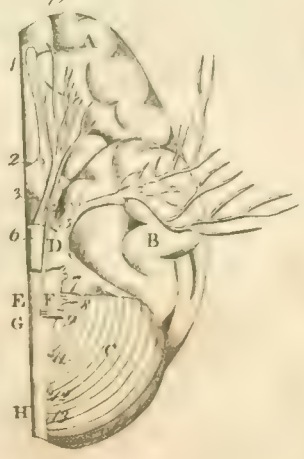


Fig. 5.



J. Bell. Pinx. W. H. Lizars. Edin.

Fig. 3.

Fig. 1.

Fig. 6.

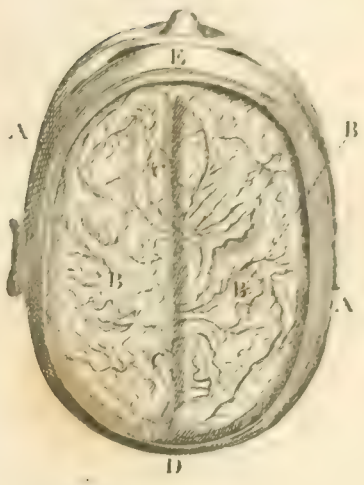


Fig. 2.

Fig. 7.

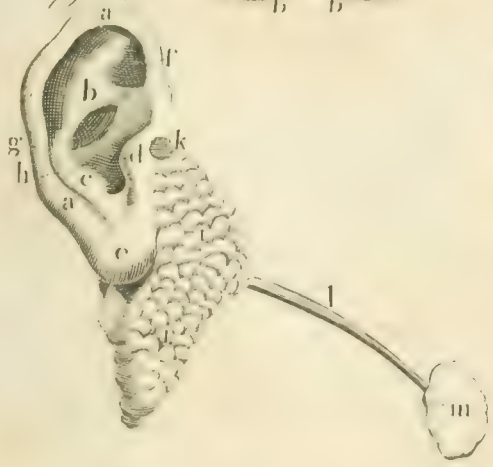


Fig. 4.

Fig. 5.

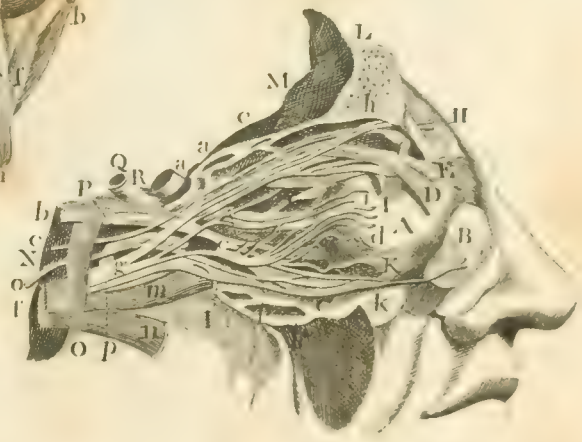


Fig. 10.

Fig. 9.

Fig. 8.

Y. Ball. Pin. Wall. Sculptor. fecit

General variations, &c.

best and moſt ſcientific methods of arranging the ſeveral claſſes of organized beings, are founded on their anatomical ſtructure.

Fourthly, From comparing the organization of man with that of other animals, we derive conſiderable aid in our phyſiological reſearches, as many functions of the animal economy can be but imperfectly underſtood, without comparing in various claſſes the organs which are ſubſervient to them. From a want of this comparative view, there have ariſen among anatomiſts many diſputes, which a more enlarged acquaintance with this ſubject has decided.

To theſe advantages of comparative anatomy, we may add, that it may be practiſed at all times and in all places; and this enables thoſe, who from prejudice or delicacy, are withheld from the ſtudy of anatomy on the human ſubject, to acquire at an eaſy rate a knowledge of this uſeful ſcience, ſufficient for the uſual purpoſes of a liberal education.

In the view which we are here to take of comparative anatomy, it is by no means our intention to enter into a particular detail of the ſtructure of the ſeveral ſpecies, or even genera of animals. We propoſe, however, to conſider pretty fully the diverſities of organization exhibited by the ſeveral claſſes, and to exemplify theſe by ſome well-known individuals of each. We ſhall thus, we truſt, render the ſubject intereſting to the general reader, for whom this article is calculated, rather than for profeſſional men; and enable the naturaliſt, the veterinary ſtudent, the ſportſman, and the artiſt, to profit by our labours. But before entering on the particular comparative view of the ſeveral claſſes, we think it proper to premiſe a few general obſervations on the variations which appear in the organization and functions of animals, on the relations which take place among theſe variations, and the arrangement of animals founded on them.

General variations, &c.

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CHAP. I. GENERAL VARIATIONS IN THE ORGANIZATION AND FUNCTIONS.

149 THE moſt obvious and ſimple function of an animal is motion, and we therefore begin with the organs by which this is produced. All animals are furniſhed with muſcles, or muſcular fibres, but a great proportion of them have nothing analogous to bone. In thoſe which have bones, there are two ſtriking diſtinctions; in one diviſion they are ſituated within the muſcles, forming an internal articulated ſkeleton; in the other they form an external ſcaly or ſhelly covering, within which the muſcles are included.

Thoſe animals which are furniſhed with articulated ſkeletons, conſtituting what is called a *vertebral column*, are denominated vertebral animals. Of theſe there are four orders, the mammalia, birds, fiſhes, and reptiles. All other animals, comprehending the molluſca, inſects, worms, and zoophytes, may be called *invertebral animals*.

150 The general differences in the organs of ſenſation are much leſs ſimple; they may be conſidered as reſpecting the internal nervous ſyſtem, and the organs of the external ſenſes. With reſpect to the former, ſome animals appear to have no nervous ſyſtem, as the zoophytes; another claſs has all of this internal ſyſtem except the brain, ſituated in the ſame cavity with the viſcera, as the molluſca, inſects, and ſome of the articulated worms; the third and moſt complete claſs, have the common origin of the nerves ſituated in a cavity, diſtinct from that of the viſcera, within the vertebral column; this comprehends all the vertebral animals. The two firſt claſſes have the ganglia or nervous knots, (Vid. GANGLIA, *Anatomy*) forming protuberances in the general nervous cord, as is the caſe with inſects and ſome articulated worms; or have them only within the larger cavities, as the molluſca: the laſt diviſion have them either on the ſides of the cord, or within the cavities, or both.

151 The external ſenſes differ in number and energy. All the vertebral animals agree with man in having five ſenſes. Of the invertebral animals, all appear to poſſeſs ſmell, taſte, and feeling; moſt of the molluſca and inſects, as far as is yet known, are without hearing; and the molluſca who want heads, the larvæ of ſome inſects, many of the articulated worms, and all the zoophytes, are not poſſeſſed of ſight. The energy of the ſenſes varies very conſiderably in different claſſes, and in different individuals; ſome, as moſt of the dogs, the vulture, and moſt of the ſarcophaga, or animals which prey on carrion, have the ſenſe of ſmelling extremely acute, and in theſe the membrane lining the naſal cavities appears to be proportionally more extended than in others. Some excel in the ſenſe of feeling, particularly man and the monkey tribe, in whom the extremities are moſt divided, moſt delicate, and furniſhed with the moſt minute ramifications of the ſuperficial nerves. Man, and thoſe animals who, like man, have the power of moving the head in all directions, poſſeſs a great extent of viſion, both as to circuit and diſtance; and theſe have two eyes ſunk and fixed within the head: others, as moſt inſects, which are to ſee minute objects near at hand, have either ſeveral eyes, or at leaſt eyes containing ſeveral lenſes. But the differences which appear in theſe organs will be fully noticed in comparing the ſeveral claſſes.

The organs of digeſtion furniſh us with two great diſtinctions. Some animals, as moſt of the zoophytes, have only one opening to the alimentary canal, which ſerves both for the taking in of aliment, and the rejection of the excrement; in all others this canal has two diſtinct openings, at a greater or leſs diſtance from each other, according as the convolutions of this canal are more or leſs numerous. Another difference which has conſiderable influence on the nature of the aliment, adapted to the ſeveral ſpecies is, that ſome animals have the mouth furniſhed with teeth or other hard bodies for the purpoſe of breaking down ſolids, and that others want theſe organs. In the latter caſe, the animal, if its mouth be large, can ſwallow its food entire, or if its mouth be in the form of a tube, can only ſuck in fluid ſubſtances. The nature of the bodies which the animal is to maſticate, is alſo influenced by the form of the teeth: thus ſome animals have only teeth formed for cutting and tearing, and therefore can only ſubſiſt on fleſh, or are carnivorous; others have chiefly grinding teeth, calculated only for bruiſing herbs a[illegible]

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General variations, &c.

and these are herbivorous; a third class have both, and are omnivorous. This difference of aliment is attended with a correspondent difference in the structure of the alimentary canal, as to its greater or smaller length, the number of stomachs, &c.

153 The chyle formed from the aliment by the action of these organs, is carried to its place of destination in one of two ways; it either exudes through the sides of the alimentary canal, or it is absorbed by particular vessels, by which it is conveyed into the general circulation. The former takes place in the zoophytes, and according to Cuvier in most insects, which appear to possess no proper circulating vessels. The latter is the case in the mollusca, and in all the vertebral animals; but these have the blood red and the chyle white, while those have all the fluids of the same whitish colour. Of the vertebral animals too, the chyle is opake in some, as the mammalia, and transparent like the lymph in others, as in birds, fishes, and reptiles.

154 In the organs of circulation several very important distinctions take place.

Some appear to have no circulating system, as insects and zoophytes. In those which possess circulating organs, some have a double circulation, or in them all the venous blood passes through the lungs, before it again enter the arterial system, as man, mammalia, birds, fishes, and many of the mollusca; others have only a single circulation, or in these a great part of the venous blood re-enters the arterial system, without passing through the lungs, as in reptiles. The structure and position of the heart is different in various classes. In some it is double, one part serving for circulating the blood through the lungs, and the other for distributing it through the rest of the body; and in this case the parts may be united, as in man, the mammalia, and birds, or they may be distinct, as in the cuttle-fish. In others the heart is single, or consists of one ventricle, which may be situated either at the base of the general artery, as in snails and some other mollusca, or at the base of the pulmonary artery, as in fishes.

155 The organs of respiration display striking varieties, first, according to the element which is to serve as the medium: if this be air, it is received into the interior of the respiratory organs; if it be water, it merely glides over the surface of lamellæ, which have been named branchiæ, as in fishes and many of the mollusca, or of fringes, as in some worms. The air many be admitted into the body by one opening or by many. The former is the case with all animals who have proper lungs; the tube which receives the air is subdivided into numerous branches, terminating in cells, which are reunited, usually, into two masses, which the animal can at pleasure compress or dilate. In insects, which respire through many openings, the air-vessels are most minutely ramified, so as to admit the air to every part of the body, and these animals are said to respire by tracheæ. Lastly, The zoophytes, with the exception of the echinodermata, appear to have no respiratory organs.

156 There are only two general differences in the organs of voice, and these respect the position of the glottis, where the sound is formed. In birds, this is situated at the base of the windpipe, where this divides into two branches going to the lungs; in quadrupeds and reptiles, it is placed at the commencement of the windpipe, at the root of the tongue. Only these three classes have a glottis; in others sounds are produced by various mechanical means, by which the external air, or that contained within some part of their bodies, is set in rapid motion.

General variations, &c.

The differences which take place in the organs of 157
generation are of two kinds, as they relate to the action itself, and to the consequences of this action. In a few animals, which mostly belong to the zoophytes, there is no copulation, but the young grows upon the body of the parent, like a shoot upon a tree: others propagate only by copulation, and are of course of two sexes; these, however, may be distinct in different animals, or united in the same; this last only takes place in the mollusca and in the zoophytes; all the vertebral animals and insects have the sexes distinct.

In hermaphrodite animals each individual can generate alone, as the bivalve shell-fish; others copulate reciprocally, or each individual performs the double office of male and female; this is the case with snails, and such other of the mollusca as crawl on the belly.

As to the produce of generation, there are three modes in which the offspring is brought forth. Some animals, as some of the zoophytes and of articulated worms produce shoots which remain for some time on the body of the animals, and these are gemmiparous. Others, as man and the mammalia, contain the fœtus within a uterus, to which it is connected by a net-work of blood-vessels, and from which it is sent forth alive; these, therefore, are viviparous. A third class, comprehending all the other animals, have the young contained within a shell, and enveloped by a substance which it absorbs before it is hatched; the viper may seem an exception to this division, as it brings forth its young alive; but then these have been hatched in the receptacle which contained the eggs; these animals are called *oviparous*.

Lastly, The organs of secretion show some diversity. All the vertebral animals and some mollusca secrete by means of glands situated in various parts of the body, or at least by means of expansions of vessels. The only secretory organs in insects seem to be tubes of various lengths, which attract with the spongy tissue of their sides, those fluids which they are to separate from the general nutritious mass. The secretory organs in the zoophytes are very imperfectly understood.

These are the principal general differences which we had to notice as taking place in animals. The following Table exhibits a comprehensive view of these, arranged in the order in which we have enumerated them.

1. OSSIFICATION.

A. a. Animals with an internal bony skeleton.
MAN, MAMMALIA, BIRDS, REPTILES, FISHES properly so called.

b. ——— with an internal cartilaginous skeleton.
CARTILAGINOUS FISHES.

B. a. ——— with an external horny skeleton.
PERFECT INSECTS, LITHOPHYTES.

b. Animals

General relations, &c.

b. Animals with an external cretaceous ſkeleton.
CRUSTACEA, and moſt of the ZOOPHYTES.

C. ——— without a ſkeleton.
LARVÆ of INSECTS, WORMS, POLYPI.

2. IRRITABILITY.

A. Animals which have the whole body muſcular.
Moſt larvæ of INSECTS, WORMS, POLYPI.

B. ——— which have the muſcles covering the ſkeleton,
MAN, MAMMALIA, BIRDS, FISHES, REPTILES.

C. ——— which have the muſcles covered by the ſkeleton.
PERFECT INSECTS, CRUSTACEA.

3. SENSATION.

A. Animals which have a brain and nerves readily diſtinguiſhed from the ſpinal marrow.
MAN, MAMMALIA, BIRDS, FISHES, REPTILES.

B. ——— which have a brain and nerves ſcarcely to be diſtinguiſhed from the ſpinal marrow.
INSECTS, CRUSTACEA, WORMS.

C. ——— which have no apparent ſenſorium.
ZOOPHYTES.

4. DIGESTION.

A. Animals which have one ſtomach, or more, readily diſtinguiſhed from the œſophagus and the alimentary canal.
MAN, MAMMALIA, BIRDS, CRUSTACEA.

B. ——— which have the ſtomach diſtinguiſhed from the œſophagus and alimentary canal only by certain ſwellings.
FISHES and REPTILES.

C. ——— which have only an alimentary canal.
INSECTS, WORMS, ZOOPHYTES.

5. CIRCULATION.

A. a. Animals with red blood, and a heart having two ventricles and two auricles.
MAN, MAMMALIA, BIRDS.

b. ——— with a heart having one ventricle divided into ſeveral cavities, and two auricles.
REPTILES.

c. ——— with a heart having but one ventricle and one auricle.
FISHES.

B. Animals with white blood, and a heart formed of a longitudinal canal jointed and contractile.
Moſt CRUSTACEA, WORMS.

C. ——— without a heart, but with fluids contained in veſſels.
INSECTS, ZOOPHYTES.

6. RESPIRATION.

A. a. Animals which reſpire by means of lungs not adhering and ſpongy.
MAN, MAMMALIA.

b. ——— which reſpire by means of lungs not adhering, but formed of cells, and muſcular.
REPTILES.

c. ——— which reſpire by means of lungs adhering to the ribs, and furniſhed with appendages.
BIRDS.

B. ——— which reſpire by means of gills of various forms.
FISHES, CRUSTACEA.

C. ——— which reſpire by means of ſtigmata, or holes ſituated in different rings.
INSECTS, TERRESTRIAL WORMS.

D. ——— which reſpire by means of tracheæ, or by external fringed bodies.
AQUATIC WORMS.

E. ——— which appear to have neither ſtigmata nor tracheæ.
ZOOPHYTES ex. ECHINODERMATA.

7. GENERATION.

A. Animals viviparous.
MAN, MAMMALIA.

B. ——— oviparous.
BIRDS, FISHES, REPTILES, INSECTS, CRUSTACEA, WORMS.

C. ——— which may be propagated by cuttings.
WORMS, POLYPI.

8. SECRETION.

A. Animals ſecreting by means of glands.
MAN, MAMMALIA, BIRDS, FISHES, REPTILES, and ſome MOLLUSCA.

B. ——— which appear to have no glands.
Some MOLLUSCA, INSECTS, WORMS, ZOOPHYTES.

CHAP. II. GENERAL RELATIONS WHICH TAKE PLACE AMONG THE VARIATIONS OF ORGANIZATION AND FUNCTIONS.

WE ſhall beſt obſerve theſe relations by comparing together the ſeveral functions, two by two.

To begin with one of the moſt obvious, reſpiration, we perceive that this is always regulated by the motion of the nutritious fluid. In animals which are furniſhed with a heart and veſſels, there is a central receptacle, in which this fluid is collected, and from which it is diſtributed to every part of the body; the heart is its great goal, from which it ſets out, and to which it muſt return before performing a new circuit.

It muſt, therefore, at its ſource undergo the action

General relations, &c.

of the air, and accordingly, before it is ſent through the general artery, to the various organs, it is circulated through the lungs or branchiæ for this purpoſe. But in animals, as inſects, which have neither heart nor veſſels, this correſpondence is unneceſſary. In them the nutritious fluid has no regular motion, no general ſource; it could not have been prepared in a ſeparate organ, before its diſtribution to the reſt of the body, as, exuding through the pores of the inteſtinal canal, it continually bathes the ſeveral parts, and introduces freſh particles between thoſe which compoſe them. The air, therefore, could exert its action only at the very points of this introduction, and the very inſtant when it happens. This is extremely well provided for by the diſpoſition of the tracheæ, as there is no one ſolid point in the bodies of inſects to which the fine ramifications of the air veſſels do not extend, and at which the chemical action of the air does not take place. As we clearly ſee the cauſes of theſe relations between the organs belonging to theſe two functions of reſpiration and circulation, we are authorized to conclude that other relations, which are found to hold between them, depend upon cauſes of the ſame kind, though perhaps not equally evident.

158 For inſtance, of thoſe animals who have blood-veſſels and a double circulation, ſome reſpire by admitting the air immediately into the ſpongy ſubſtance of the lungs, and in theſe the two trunks of the large arteries approach each other, and are furniſhed with muſcular ventricles united into one fleſhy maſs; others reſpire through the medium of water paſſing between the folds of their branchiæ, and in theſe the two trunks are always ſeparated, whether each be furniſhed with a ſeparate ventricle as in the cuttle fiſh, or both have a common ventricle as in fiſhes and the molluſca.

159 The relation which ſubſiſts between reſpiration and motion is more eaſily explained. We find, that thoſe animals which move quickeſt, and are conſtantly reſident in the air, ſtand moſt in need of pure air, and can obtain it with the greateſt facility. The conſtant demand for freſh air, is found by modern chemiſtry to be owing to the loſs of irritability, in the muſcular fibre, which is ſupplied by ſomething from the air. Birds, therefore, who from the ſwiftneſs of their motion, and conſequent loſs of irritability, have the greateſt demand for freſh air, have alſo the moſt complete and extenſive reſpiratory organs. In reptiles, again, whoſe motion is generally very ſlow, and whoſe irritability is retained with great obſtinacy, theſe organs are incomplete, and their veſſels confounded with thoſe of the general circulation, and they can exiſt long without air. The mammalia ſeem to hold the middle rank between theſe two extremes.

160 The relations which take place between the differences of the organs of ſenſation with thoſe of reſpiration likewiſe deſerve attention.

General relations, &c.

In animals with cold blood, the external ſenſes are much leſs acute than in the warm-blooded animals; and in the former the brain is leſs, and does not completely fill the ſkull. This is doubtleſs owing to the ſlower motion of the cold-blooded animals requiring leſs nervous energy.

The digeſtive organs are found to poſſeſs more power in proportion as thoſe of reſpiration are more active, as the great waſte occaſioned by theſe muſt be compenſated by a proportional ſupply of aliment received. Hence in birds, the ſtomach is extremely powerful, the digeſtion very vigorous, and the demand for food frequent and importunate; while reptiles require very little nouriſhment, and can remain very long without a freſh ſupply. 161

We have ſeen the relations which ſubſiſt between the organs of reſpiration and thoſe of digeſtion. Theſe laſt are alſo immediately related to the organs of motion and of ſenſation; for the nature of the aliment by which the animal is to be nouriſhed is completely determined by the diſpoſition of the alimentary canal; but if the animal had not its organs of ſenſation and of motion calculated for diſtinguiſhing and procuring its proper food, it is evident that it could not exiſt: thus an animal who can digeſt only fleſh, muſt of neceſſity be enabled to perceive, to purſue, to ſeize, to overcome, and tear in pieces its proper prey. It muſt therefore poſſeſs a piercing ſight, an acute ſmell, a rapid motion, agility, and conſiderable ſtrength in its jaws and talons. Accordingly, we never ſee exiſting in the ſame animal a tooth formed for cutting fleſh together with a horny foot; this explains why every animal with hoofs is herbivorous, and why hoofs indicate grinding teeth with flattened crowns, a very long alimentary canal, a large ſtomach, or ſeveral ſtomachs, and many other ſimilar relations. Among all theſe relations there are many which have ſomething in common, and there are always ſome in which the differences are few, ſo that by bringing together thoſe which have the neareſt reſemblance, we are enabled to form a kind of ſeries, which will appear gradually to proceed from a primitive ſtandard. Hence the idea of a ſcale of beings, which ſome naturaliſts have formed, exhibiting a regular gradation, beginning at the moſt perfect, and deſcending to the moſt ſimple ſtate of organization, or *vice verſa*. As the links which conſtitute this chain are by no means entirely known, a perfect ſcale of beings is at preſent not to be expected.

The following table diſplays a ſeries of animals, beginning with the moſt ſimple ſtate of organization, and aſcending to the moſt perfect.

SCALE

Arrangement of Animals, &c.

SCALE of ANIMALS according to the greater or leſs ſimplicity of their Structure.

1. Having only a ſtomach,	Polypes. *Hydra.*	*Linne.*
	Biphores.	
	Vinegar eels.	*Forſkall.*
	Vibrio.	
2. A ſtomach and inteſtines,	Sea anemonies.	
	Actinias.	*Linnè.*
	Nettles.	
	Meduſæ.	
	Argonauts.	
	Beröe.	
	Moſt animalcula of vegetable infuſions.	
3. Having beſide theſe an external organ for reſpiration in the water,	Flower-polypes.	
	Vorticellæ.	*Muller.*
	Brachioni.	
	Botrylli.	*Pallas.*
4. Having beſides theſe, ſome viſcera, a ſyſtem of abſorbents, organs of generation, (but not of copulation), and a net-work of nerves,	Thetis.	*Linnè.*
	Anomiæ.	
	Nereïs.	
	Animals of the bivalve ſhells.	
5. Having beſide, a blood-veſſel, and ſometimes the ſenſe of ſeeing,	Inteſtinal worms.	
6. Having beſide, organs of copulation (hermaphrodites), a heart without auricles, but with diſtinct pulſations, nervous ganglia, the ſenſe of viſion, and an imperfect organ of maſtication,	Leeches.	
	Snails.	
	Animals of the univalve ſhells.	
7. Having beſides a brain, organs of locomotion, male and female organs of generation diſtinct, ſometimes the ſenſe of hearing, and an external bony ſyſtem,	Inſects.	
8. Having rudiments of an internal bony ſyſtem, a heart and blood-veſſels,	Cartilaginous fiſhes.	
9. Having a complete internal bony ſyſtem,	Fiſhes properly ſo called.	
10. Having internal lungs, and an organ of ſmelling,	Amphibia.	
11. Having beſides a bilocular heart,	Birds.	
12. Having perfect organs of taſte and maſtication, organs for ſecreting milk, and a uterus,	Mammalia.	
	Man.	

CHAP. III. ARRANGEMENT OF ANIMALS FOUNDED ON THE GENERAL DIFFERENCE OF THEIR ORGANIZATION.

HAVING taken a ſurvey of the general differences which take place in the organization and functions of animals, and of the relations which ſubſiſt among theſe differences; we are now to proceed to a ſummary view of the whole animal kingdom, and conſider what is common in the organization of the various claſſes of which it is compoſed.

The whole animal kingdom is generally divided into two great families, that of the vertebral animals, who have red blood; and that of the invertebral animals, almoſt all of which have white blood.

In the firſt diviſion we always find an interior articulated ſkeleton, of which the principal ſupport is the vertebral column, having the head at its atlantal extremity, and containing within its cavity the general origin of the nerves; its ſacral extremity is commonly prolonged to form a tail. The ribs, which are ſeldom wanting, are ſituated on both ſides of this column (G).

(G) As the terms general employed in the human anatomy are by no means calculated for deſcribing the ſtructure

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These animals have never more than four limbs; but in some of them two of these are wanting, in others all.

Their brain is always contained within a peculiar cavity of the head called the *cranium*; all the spinal nerves send off filaments to assist in forming a nervous chord, which is derived from one of the nerves of the cranium, and is distributed to most of the viscera.

They have always five senses: two eyes which they can move at pleasure; the ear has always at least three semicircular canals; the organ of smell is always confined to cavities in the fore part of the head; there is always at least one fleshy ventricle, by which the circulation of the blood is carried on; sometimes there are two ventricles, which are always united.

The lymphatic vessels are always distinct from the blood-vessels.

The jaws are always situated horizontally, and separate from above downwards.

The alimentary canal is continued from the mouth to the anus, which is always situated behind the bones with which the sacral extremities are articulated.

The intestines are enveloped in a membranous bag, called *peritonæum*.

There are always a liver, and a pancreas or sweetbread, by which liquors are secreted for the purposes of digestion, and a spleen, in which one part of the blood which goes afterwards to the liver, undergoes some previous change.

The urine is always separated by two kidneys, which are situated on the sides of the vertebral column without the peritonæum, and above which are always two bodies called *atrabiliary capsules*, the use of which is unknown. The vertebral animals are subdivided into two sections; the hot-blooded, and the cold-blooded.

In the hot-blooded vertebral animals there is always a heart and a double circulation. Respiration is carried on by means of lungs, and without the exercise of this function they cannot exist.

The brain in these animals completely fills the cavity of the skull, and their eyes close by means of lids. The tympanum of their ear is sunk in the solid bone of the skull, as the parts of the labyrinth are entirely surrounded by bone; besides the semicircular canal, there is always an organ with two spiral cavities, like the shell of a snail; the nostrils serve for the passage of the air in breathing, and form a communication with the mouth. The trunk is always surrounded by the ribs, and there are for the most part four limbs.

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The cold-blooded vertebral animals are deficient in several of these particulars; many of them want ribs, and some of them have no limbs. In them the brain never entirely fills the cavity of the skull, and their eyelids are seldom moveable; the tympanum of their ear, as also the small bones, is often wanting, the spiral cavity always; when the tympanum is present, it is never sunk within the skull.

Each of these two divisions is again subdivided into two classes; the former into the mammalia and the birds; the latter into the fishes and the reptiles: the structure of these classes will be considered in their proper place.

The invertebral animals have fewer common circumstances, and constitute a less regular series than those of which we have been speaking; their hard parts, when they are present, are generally, at least when articulated, placed externally. No part of their nervous system is contained within a bony sheath, but floats in a common cavity with the viscera.

The brain only is placed above the alimentary canal; from it proceed two branches which embrace the gullet like a collar, and from which the general bundle of the nerves is formed. In these animals respiration is never carried on by means of cellular lungs, and they are all destitute of voice; their jaws have no particular direction, and their mouths are often merely suckers; they have no kidneys, and consequently secrete no urine; if they have limbs, these are always at least six in number.

Considered in an anatomical point of view, they may be divided into five classes, namely, the mollusca, the crustacea, insects, worms, and zoophytes. We shall treat of these several classes in the order in which we have enumerated them.

CHAP. IV. MAMMALIA, OR QUADRUPEDS.

Sect. I. *General Observations.*

362 Whether man is naturally a biped or a quadruped.

A question has been started by some fanciful philosophers, "Whether man is naturally a *biped* or a *quadruped?*" and much ingenuity has been employed to establish the latter opinion. But it is presumed that few of their readers have been made converts to such an opinion, and that not many of ours will require much argument to persuade them of their erect destination. It may therefore suffice to observe, that this erect position is best adapted to the conformation of the human head, and the ponderous quantity of human brains:—that the articulation of the *os occipitis* with the first vertebra of the neck, is differently constructed from that of quadrupeds, with the obvious design that man should be able to move his head in every direction with the greatest facility:—that the human species (and also monkies) are destitute of that strong ligament or tendinous aponeurosis, vulgarly called *pax-wax*, which quadrupeds possess (as a kind of *stay-tape*), to prevent the head from sinking to the earth; to which, from its natural position, it must be very prone:—and that our eyes and ears are, fortunately, not

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structure of the inferior animals, we shall in this article make use of others, with which we have been favoured by Dr Barclay, the ingenious lecturer on anatomy, to whose publication on anatomical nomenclature we refer the reader for their explanation.

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not placed as thoſe of the quadrupeds. The axis of the human eye is nearly perpendicular with a vertical ſection of the head; whereas, in the brute creation (the larger ape excepted), the poſition of the eyes forms an acute angle:—nature has alſo furniſhed other animals with a *ſuſpenſorium oculi*, a muſcle which the *erect* attitude renders needleſs, though highly neceſſary in the *prone*; conſequently, whoever tries the experiment will find that, in the inclined direction, both his eyes and his ears are in the moſt unfavourable ſituation poſſible for quick hearing or extenſive viſion. In fine, the ſhape, breadth, ſtrength of the vertebræ of the back and loins, are all coincident with the erect attitude of the trunk.

All quadrupeds have a covering of hair, wool, &c. to defend them from the injuries of the weather, which varies in thickneſs according to the ſeaſon of the year and difference of the climate; thus in Ruſſia and the northern countries, the furs are very thick and warm, while the little Spaniſh lap-dogs, and Barbary cows, have little or no hair at all.

163 Cuticula, cutis, panniculus carnoſus.

The cutis and cuticula in quadrupeds are diſpoſed much in the ſame way as the human, only more claſtic; immediately under this, there is a very thin cutaneous muſcular ſubſtance called *panniculus carnoſus*, which is common to all quadrupeds, the porcine kind excepted; this principally covers the trunk, ſerving to ſhrivel the ſkin, in order to drive off inſects, their tails and heads not being ſufficient for this purpoſe, while their extremities are employed in their ſupport and progreſſion.

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164 [illegible]

It has probably been from obſerving ſome muſcles of the human body, ſuch as the platyſma myoides, cremaſter, and frontales, and the collapſed [illegible] of emaciated ſubjects, to reſemble this thin muſcle, that ſome of the older anatomiſts reckoned ſuch a panniculus among the common teguments of the human body. This Carolus Stephanus has well obſerved.

165 Moſt quadrupeds want clavicles, whereby their atlantal extremities fall upon their cheſt, to [illegible] to make their thorax proportionally narrower than the human. This ſmall diſtance of their atlantal extremities is very neceſſary for their uniform progreſſion: apes indeed and ſquirrels have clavicles to allow them a more full uſe of their extremities in climbing; but when they walk on all-fours, they move but indifferently.

Their head is connected to the firſt vertebræ of the neck by two eminences as in man. The vertebræ of the neck are never leſs than ſix, or more than nine. The number of the dorſal and other vertebræ differs conſiderably in the various individuals. The following table exhibits theſe differences in each ſpecies. The brain of theſe animals is more complicated than that of the other claſſes.

TABLE of the Proportional Number of Spinal Vertebræ in various ſpecies of Mammalia.

Species.	*Dorſal Vertebræ.*	*Lumbar Vertebræ.*	*Sacral Vertebræ.*	*Coccygian Vertebræ.*
Man,	12	5	5	4
Simia ſatyrus, Lin. Orang-outang,	12	4	3	4
—— *troglodytes*. Jocko,	13	5	4	5
—— *lar*. Gibbon,	14	3	6	0
—— *paniſcus*. Coaïta,	14	3	2	32
—— *capucina*. Weeping monkey, ſai,	14	7	4	25
—— *roſalia*. Silky monkey, marakina,	12	7	1	26
—— *patas*. Patas.	12	7	3	16+
Maimon, rib-noſed ape,	12	7	1	13
—— *cynomolgus*. Macaca,	12	7	1	5
—— *chineſis*. Chineſe monkey,	11	7	3	20
—— *ſphinx*. Baboon, papion,	12	7	1	31
—— *inuus*. Magot,	12	7	1	3
—— *maimon*. Mandrill,	12	7	3	13
—— *pongo*. Pongo,	12	4	3	4
—— *beelzebub*. Aloſti, howling baboon,	14	4	5	25
Lemur catta. Macauco,	12	7	3	18
—— *gracilis*. Lori,	15	9	1	9
—— *tarſius*. Tarſier,	14	5	3	17+
Veſpertilio vampyrus. Rouſette, vampyre bat,	12	4	1	0
—— *murinus*. Common bat,	11	5	4	12
—— *noctula*. Noctule, great bat,	12	7	3	6
—— *ferrum equinum*. Horſe-ſhoe bat.	12	6	3	12

TABLE

TABLE, &c. continued.

Species.	*Dorsal Vertebræ.*	*Lumbar Vertebræ.*	*Sacral Vertebræ.*	*Coccygian Vertebræ.*
Lemur volans. Flying lemur,	12	6	1	22
Erinaceus europæus. Hedgehog,	15	7	4	12
——— *ecaudatus.* Tanrec,	15	6	3	8
Sorex mus araneus. Muſetta, ſhrew,	12	7	3	17
Talpa europæa. Mole,	13	6	7	11
Urſus maritimus. White bear,	13	6	7	11
—— *arctos.* Brown bear,	14	6	5	4+
—— *meles.* Badger,	15	5	3	16
—— *gulo.* Glutton,	16	5	3	18
Viverra. Coati,	14	6	1	10+
Ur. lotor. Racoon,	14	7	3	20
Muſtela lutra. Otter,	14	6	3	21
——— *martes.* Martin,	14	6	3	18
——— *vulgaris.* Weaſel,	14	6	3	14
Viverra civetta. Civet,	13	6	3	20
Felis leo. Lion,	13	6	3	23
—— *tigris.* Tiger,	13	7	4	19
—— *pardus.* Panther,	13	7	3	24
—— *concolar.* Couguar,	13	7	3	22
—— *catus.* Cat,	13	7	3	22
Canis familiaris. Wolf-dog,	13	6	3	22
—— *lupus.* Wolf,	13	7	3	19
—— *vulpes.* Fox,	13	7	3	20
—— *hyæna.* Hyæna,	16	4	2	8+
Didelphis cancriphaga. Cayenne opoſſum, crab-eater,	13	6	5	16+
——— *murina.* Marmoſe,	13	6	1	29
——— *orientalis.* Phalarger,	13	6	1	30
Hiſtrix criſtata. Porcupine,	14	5	4	8+
Lepus timidus. Hare,	12	7	4	20
—— *cuniculus.* Rabbit,	12	7	2	20
Cavia capybara. Cabæ,	13	6	2	4+
—— *cobaya.* Guinea pig,	13	6	4	6
—— *paca.* Paca, or ſpotted cavy,	13	6	5	7
—— *aguti.* Agouti,	12	8	4	7
Caſtor fiber. Beaver,	15	5	3	23
Sciurus volans. Flying ſquirrel,	12	8	3	13
Mus marmotta. Marmotte,	13	7	6	22
—— *arvalis.* Field mouſe,	13	7	3	15
—— *amphibius.* Water rat,	13	7	4	23
—— *rattus.* Black rat,	13	9	3	26
—— *decumanus.* Norway rat,	13	7	4	23
—— *muſculus.* Common mouſe,	12	7	4	24
—— *ſylvaticus.* Field or harveſt rat,	12	7	3	23
—— *cricetus.* Hamſter,	13	6	4	15
—— *glis.* Fat dormouſe,	13	7	2	18
—— *quercinus.* Garden dormouſe,	13	7	4	24
Myrmecophaga didactyla. Ant-eater,	16	2	4	40
Manis pentadactyla. Pangolin,	15	5	3	28
—— *tetradactyla.* Long-tailed manis,	13	5	2	45
Daſypus. Armadillo,	11	4	3	30
Bradypus didactylus. Two-toed ſloth,	23	2	4	7+
Elephas indicus. Elephant,	20	3	4	14
Sus ſcrofa. Hog,	14	5	3	4

TABLE, &c. continued.

Species.	*Dorſal Vertebræ.*	*Lumbar Vertebræ.*	*Sacral Vertebræ.*	*Coccygian Vertebræ.*
Tapirus. Tapir,	20	4	3	12
Rhinoceros,	19	3	4	22
Camelus bactrianus. Camel,	12	7	4	17
——— *dromedarius.* Dromedary,	12	7	4	18
Cervus elaphus. Stag,	13	6	3	11
Camelo-pardalis. Camelopard,	14	5	4	18
Antelope cervicapra. Antelope,	13	6	5	15
——— *dorcas.* Gazelle,	13	5	5	11
——— *rupicapra.* Chamois goat,	13	5	4	7†
Capra hircus. Goat,	13	6	4	12
Ovis aries. Sheep,	13	6	4	16
Bos taurus. Ox,	13	6	4	16
Equus caballus. Horſe,	18	6	2	17
——— *quagga.* Couaga,	18	6	7	18
Phoca vitulina. Seal,	15	5	2	12
Delphinus delphis. Dolphin,	13	} in all	—	—
——— *phocæna.* Porpoiſe,	13	} 66	—	—

Their eyes have only two lids, and they agree with man in having the internal ear furniſhed with four little bones articulated with each other, and a completely ſpiral cochlea, and a tongue entirely ſoft and fleſhy. Their heart, lungs, and diaphragm reſemble thoſe of man in their general ſtructure; and differ only in a few circumſtances, which will be beſt ſeen in the exemplification of their ſtructure, which is preſently to be given.

In treating of quadrupeds we ſhall divide them into the carnivorous, or rather thoſe which feed indifferently on fleſh and vegetables, and the granivorous. The ſtructure of the former we ſhall exemplify in the dog, that of the latter in the cow.

Sect. II. *The Anatomy of a Dog.*

We may firſt obſerve of this animal, as of moſt *quadrupeds*, that its legs are much ſhorter in proportion to its trunk than in man, the length of whoſe ſteps depends entirely on the length of his ſacral extremities; however, to balance this, the trunk of the animal is proportionally longer and ſmaller, his ſpine more flexible, by which he is able at each ſtep to bring his ſacral nearer to his atlantal extremities. His common teguments are much a-kin to thoſe of other quadrupeds, only they allow little or no paſſage for ſweat; but when he is over-heated, the ſuperfluous matter finds an exit by the ſalivary glands, for he lolls out his tongue and ſlavers plentifully. We are not, however, to ſuppoſe, that becauſe a dog does not ſweat, he has no inſenſible perſpiration. That a dog perſpires is evident, becauſe one of theſe animals can trace another by the ſcent of his footſteps; which could not happen if a large quantity of perſpirable matter was not conſtantly going off.

The pyramidal muſcles are wanting, to ſupply which the rectus is inſerted fleſhy into the os pubis.

166 Brain. The brain is proportionally much ſmaller than the human; but as in man, it is divided into cerebrum and cerebellum, and theſe two parts bear nearly the ſame proportion to one another as in us. There was no ſuch occaſion for ſo great a quantity of brain in theſe animals as in man; ſeeing that in them all its energy is employed in their progreſſion, while man has a great waſte of ſpirits in the exerciſe of his reaſon and intellectual faculties. And beſides all this, a bulky brain would be inconvenient to theſe creatures, in ſo far as it would add conſiderably to the weight of the head; which having the advantage of a long lever to act with, would require a much greater force to ſupport it than it does now; for the heads of the greateſt part of quadrupeds are not near ſo heavy as they would at firſt ſight ſeem to be, from the frontal ſinuſes being produced a great way upwards to enlarge the organ of ſmelling.

The pits in the anterior part of their ſkull are much more conſpicuous than in the human; which may be occaſioned by the depending poſture of theſe creatures heads while they gather their food: the brain at this time gravitating much on the bones while they are as yet ſoft, will gradually make impreſſions upon them at thoſe places where it riſes into eminences. This is prevented in man moſtly by his erect poſture.

167 Falx. The *falx* is not near ſo large in quadrupeds as in man, as they have little occaſion to lie on either ſide, and the two hemiſpheres of the brain are in a great meaſure hindered from juſtling againſt one another in violent motions, by the brain's inſinuating itſelf into the above-mentioned pits.

The ſecond proceſs of the *dura mater*, or *tentorium cerebello ſuper-expanſum*, is conſiderably thicker and

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ſtronger than in man. This membrane is generally oſſified, or we find the place of it ſupplied by a bone, that it may the more effectually keep off the ſuperincumbent brain from the cerebellum in rapid motions, which otherwiſe would be of bad conſequence.

168 Proceſſus mamillaris.

The olfactory nerves are very large, and juſtly deſerve the name of *proceſſus mamillaris*. They are hollow, and conſiſt of a medullary and cineritious ſubſtance, and at firſt ſight appear to be the frontal ventricles of the brain produced; but in man they are ſmall, and without any diſcernible cavity. The reaſon of this is pretty evident, if we conſider how this animal's head is ſituated; for the lymph continually gravitating upon the inferior part of the ventricles, may thus elongate and produce them; but from this very inferior part the olfactory nerves riſe, and are ſent immediately through the ethmoid bone into the noiſe. Hence the ancients, thinking they were continued hollow into the noſe, believed they were the emunctories of the brain: in the brain of ſheep, which by its firm texture is the beſt ſubject of any for ſearching into the ſtructure of this part, we evidently ſee, that the name of the *ſigmoid cavity* was very properly applied by the ancients to the lateral ventricles of the brain; which are really of a greater extent than they are ordinarily painted by anatomiſts, reaching farther backwards, and forwards again under the ſubſtance of the brain. The cortical and medullary parts, as well as the corpus calloſum, are ſimilar to thoſe parts in man.

169 Nates, teſtes.

The *nates* and *teſtes* deſerve this name much better here than in the human body, with reſpect to each other. They are larger in the quadrupeds; and hence we perceive that there is no great reaſon for aſcribing the different operations to any particular ſize or ſhape of theſe parts. They are here alſo of different colours; the *nates* being of the colour of the cortical, and the *teſtes* of the medullary ſubſtance of the brain; whereas in man they are both of one colour. The reaſon of theſe differences, and others of the like nature to be met with, we ſhall not pretend to determine; for we have hitherto ſuch an imperfect knowledge of the brain itſelf, that we are entirely ignorant of the various uſes of its different parts. We may in general conclude, that the varying in one animal from what it is in another, is fitted to the creature's particular way of living.

170 Retemirabile Galeni.

The *rete mirabile Galeni*, ſituated on each ſide of the *ſella turcica*, about which there has been ſo much diſpute, is very remarkable in theſe animals. This network of veſſels is nothing elſe than a continuation of the internal carotid arteries, which, entering the ſkull, divide into a vaſt number of minute branches running along the ſide of the ſella turcica; and, uniting afterwards, are ſpent on the brain in the common way. Galen ſeems with juſtice to ſuppoſe, that this plexus of veſſels ſerves for checking the impetuoſity of the blood deſtined for the brain.

171 Tongue.

The tongue, in conſequence of the length of the jaws, is much longer than ours; and as this creature feeds with his head in a depending poſture, the bolus would always be in danger of falling out of the mouth, were it not for ſeveral prominences or papillæ placed moſtly at the root of the tongue, and crooked backwards in ſuch a manner as to allow any thing to paſs eaſily down to the jaws, but to hinder its return. By the papillæ alſo the ſurface of the tongue is increaſed, and a ſtronger impreſſion is made on the ſenſation of taſte. In ſome animals who feed on living creatures, theſe tenter-hooks are ſtill more conſpicuous; as in ſeveral large fiſhes, where they are almoſt as large as their teeth in the fore part of their mouth, and near as firm and ſtrong.

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172 Noſe.

The *noſe* is generally longer than in man, and its external paſſage much narrower. The internal ſtructure is alſo better adapted for an acute ſmelling, having a larger convoluted ſurface on which the *membrana ſcheideriana* is ſpread; and this is to be obſerved in moſt quadrupeds, who have the oſſa ſpongioſa commonly large, and theſe too divided into a great number of exceſſively fine thin lamellæ. The ſenſibility ſeems to be increaſed in proportion to the ſurface; and this will alſo be found to take place in all the other ſenſes. The elephant, which has a head pretty large in proportion to its body, has the greateſt part of it taken up with the cavity of the noſe and frontal ſinuſes; which laſt extend almoſt over their whole head, and leave but a ſmall cavity for their brains. A very nice ſenſe of ſmelling was not ſo abſolutely neceſſary for man, who has judgment and experience to direct him in the choice of his food; whereas brutes, who have only their ſenſes, muſt of neceſſity have theſe acute, ſome having one ſenſe in greater perfection than others, according to their different way of life. We not only conclude *à priori* from the large expanded membrana ſcheideriana, that their ſenſe of ſmelling is very acute, but we find it ſo by cows and horſes diſtinguiſhing ſo readily betwixt noxious and wholeſome herbs, which they do principally by this ſenſe.

173 Ear.

The external *ear* in different quadrupeds is differently framed, but always calculated for the creature's manner of life. In ſhape it commonly reſembles the oblique ſection of a cone from near the apex to the baſis. Hares, and ſuch other animals as are daily expoſed to inſults from beaſts of prey, have large ears directed backwards, their eyes warning them of any danger before; rapacious animals, on the other hand, have their ears placed directly forwards, as we ſee in the lion, cat, &c. The ſlow hounds, and other animals that are deſigned to hear moſt diſtinctly the ſounds coming from below, have their ears hanging downwards; or their ears are flexible, becauſe they move their head for the moſt part with greater difficulty than man. Man, again, who muſt equally hear ſounds coming from all quarters, but eſpecially ſuch as are ſent from about his own height, has his external ear placed in a vertical manner, ſomewhat turned forward. In ſhort, wherever we ſee a ſpecialty in the make of this organ in any creature, we ſhall, with very little reflection, diſcover this form to be more convenient for that creature than another. The animal alſo has the power of directing the cone of the ear to the ſonorous body without moving the head. There are ſome differences to be obſerved in the ſtructure of the internal ear in different animals; but we know ſo very little of the uſe of the particular parts of that organ in the human ſubject, that it is altogether impoſſible to aſſign reaſons for theſe variations in other creatures.

174 Membrana nictitans.

All quadrupeds have at the internal canthus of the eye a ſtrong firm membrane with a cartilaginous edge, which may be made to cover ſome part of their eye; and

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and this is greater or leſs in different animals as their eyes are more or leſs expoſed to danger, in ſearching after their food. This *membrana nictitans*, as it is called, is not very large in this animal. Cows and horſes have it ſo large as to cover one half of the eye like a curtain, and at the ſame time it is ſufficiently tranſparent to allow abundance of the rays of light to paſs through it. Fiſhes have a cuticle always over their eyes, as they are ever in danger in that inconſtant element. In this then we may alſo obſerve a ſort of gradation.

175 Muſculus ſuſpentorius.

All quadrupeds have a ſeventh muſcle belonging to the eye, called *ſuſpenſorius*. It ſurrounds almoſt the whole optic nerve, and is fixed into the ſclerotic coat as the others are. Its uſe is, to ſuſtain the weight of the globe of the eye, and prevent the optic nerve from being too much ſtretched, without obliging the four ſtraight muſcles to be in a continual contraction, which would be inconvenient; at the ſame time this muſcle may be brought to aſſiſt any of the other four, by cauſing one particular portion of it to act at a time.

176 Pupilla.

The next thing to be remarked is the figure of the *pupil*, which is different in different animals, but always exactly accommodated to the creature's way of life, as well as to the different ſpecies of objects that are viewed. Man has it circular, for obvious reaſons: an ox has it oval, with the longeſt diameter placed tranſverſely, to take in a larger view of his food; cats, again, have theirs likewiſe oval, but the longeſt diameter placed perpendicularly; they can either exclude a bright light altogether, or admit only as much as is neceſſary. The pupil of different animals varies in wideneſs, according as the internal organs of viſion are more or leſs acute: Thus cats and owls, who ſeek their prey in the night, or in dark places (and conſequently muſt have their eyes ſo formed as that a few rays of light may make a lively impreſſion on the retina), have their pupils in the day-time contracted into a very narrow ſpace, as a great number of rays would oppreſs their nice organs; while in the night, or where the light is faint, they open the pupil, and very fully admit the rays. In the ſame way, when the retina is inflamed, a great number of rays of light would occaſion a painful ſenſation; therefore the pupil is contracted: on the contrary, in dying people, or in a beginning amauroſis, it is generally dilated, as the eyes on ſuch occaſions are very difficultly affected, and as it were inſenſible.

177 Tapetum.

The poſterior part of the choroid coat, which is called *tapetum*, is of different colours in different creatures. For oxen, feeding moſtly on graſs, have this membrane of a green colour, that it may reflect upon the retina all the rays of light which come from objects of that colour, while other rays are abſorbed: Thus the animal ſees its food better than it does other objects. Cats and owls have their tapetum of a whitiſh colour; and for the ſame reaſons have the pupil very dilatable, and their organs of viſion acute: And we ſhall find, that all animals ſee more or leſs diſtinctly in the dark, according as their tapetum approaches nearer to a white or black colour. Thus dogs, who have it of a grayiſh colour, diſtinguiſh objects better in the night than man, whoſe tapetum is dark brown; and who, it is believed, ſees worſt in the dark of any creature: it being originally deſigned that he ſhould reſt from all kinds of employment in the night time. The difference then of the colour of the tapetum, as indeed the fabric of any other part in different creatures, always depends on ſome particular advantage accruing to the animal in its peculiar manner of life from this ſingularity.

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178 Neck.

We look on it as a general rule, that all quadrupeds, as having occaſion to gather their food from the ground, are provided with longer necks than man; but as a long neck not only gives the advantage of too long a lever to the weight of the head, but alſo, when the animal is gathering his food, makes the brain in danger of being oppreſſed with too great a quantity of blood, by the liquor in the arteries having the advantage of a deſcent, while that in the veins muſt remount a conſiderable way contrary to its own gravity; it was therefore neceſſary that a part of the length of the neck ſhould be ſupplied by the length of the jaws. Thus we ſee horſes, cows, &c. who have no occaſion for opening their mouths very wide, yet have long jaws. Bulldogs, indeed, and ſuch animals as have occaſion for very ſtrong jaws, muſt of neceſſity have them ſhort; becauſe the longer they are, the reſiſtance to be overcome acts with a longer lever. Another exception to this general rule, is ſuch animals as are furniſhed with ſomething analogous to hands to convey their food to their mouths, as cats, apes, &c. The teeth of this creature plainly ſhow it to be of the carnivorous kind; for there are none of them made for grinding its food, but only for tearing and dividing it. It has ſix remarkably ſharp teeth before, and two very long tuſks behind; both of which the ruminating animals want. Theſe are evidently calculated for laying very firm hold of ſubſtances, and tearing them to pieces; and the vaſt ſtrength of the muſcles inſerted into the lower jaw, aſſiſts greatly in this action; while the grinders have ſharp cutting adges, calculated for cutting fleſh, and breaking the hardeſt bones. Even its poſterior teeth are not formed with rough broad ſurfaces as ours are; but are made conſiderably ſharper, and preſs over one another when the mouth is ſhut, that ſo they may take the firmer hold of whatever comes betwixt them.

179 Jaws.

180 Teeth.

181 Amygdalæ.

When we open the mouth, we ſee the amygdalæ very prominent in the poſterior part of it; ſo that it would appear at firſt view, that theſe were inconveniently placed, as being continually expoſed to injuries from the hard ſubſtances this creature ſwallows; but upon a more narrow ſcrutiny, we find this provided for by two membranous capſules, into with the amygdalæ, when preſſed, can eſcape, and remove themſelves from ſuch injuries.

182 Velum pendulum palati.

The *velum pendulum palati* is in this creature conſiderably longer than in man, to prevent the food from getting into his noſe; which would happen more frequently in this animal than in man, becauſe of its ſituation while feeding.

183 Glottis.

184 Epiglottis.

In this ſubject, as well as in other quadrupeds, there is no *uvula*; but then the *epiglottis*, when preſſed down, covers the whole rima entirely, and naturally continues ſo: there is therefore a ligament, or rather muſcle, that comes from the os hyoides and root of the tongue that is inſerted into that part of the epiglottis where it is articulated with the cricoid cartilage, which ſerves

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to raiſe it from the rima, though not ſo ſtrongly but that it may with a ſmall force be clapped down again.

185 The uſe of the uvula.

It may be aſked, however, Why the uvula is wanting here, and not in man? This ſeems to be, that quadrupeds, who ſwallow their food in a horizontal ſituation, have no occaſion for an uvula, though it is neceſſary in man on account of his erect ſituation.

In the upper part of the pharynx, behind the cricoid cartilage, there is a pretty large gland to be found, which ſerves not only for the ſeparation of a mucous liquor to lubricate the bolus as it paſſes this way, but alſo ſupplies the place of a valve, to hinder the food from regurgitating into the mouth, which it would be apt to do by reaſon of the deſcending ſituation of the creature's head. In man, the muſcle of the epiglottis is wanting, its place being ſupplied by the elaſticity of the cartilage.

186 Gullet.

The *gullet* is formed pretty much in the ſame way as the human. Authors indeed generally allege, that quadrupeds have their gullet compoſed of a double row of ſpiral fibres decuſſating one another; but this is peculiar to ruminating animals, who have occaſion for ſuch a decuſſation of fibres. The action of theſe you may eaſily obſerve in a cow chewing her cud.

187 Omentum.

The omentum reaches down to the os pubis, which conſidering the poſture of the animal we ſhall find to be a wiſe proviſion, ſince its uſe is to ſeparate an oily liquor for lubricating the guts and facilitating their periſtaltic motion; ſo in our erect poſture the natural gravity of the oil will determine it downward, but in the horizontal poſition of theſe creatures, if all the inteſtines were not covered, there would be no favourable derivation of the fluid to the guts lying in the ſacral part of the abdomen, which is the higheſt; and beſides, had the omentum reached much farther down in us, it would not only have ſupplied too great a quantity of oil to the lower part of the abdomen, but we ſhould have been in continual danger of herniæ; and even at preſent the omentum frequently paſſes down with ſome of the other viſcera, and forms part of theſe tumours. To theſe, however, the dog is not ſubject, as his viſcera do not preſs ſo much on the rings of the abdominal muſcles, and beſides are prevented from paſſing through by a pendulous flap of fat mentioned N° 35. The ſacral and ſternal lamella of the omentum is fixed to the ſpleen, fundus of the ſtomach, pylorus, liver, &c. in the ſame way as the human; but the ſuperior having no colon to paſs over, goes directly to the back-bone. This ſerves to explain the formation of the ſmall omentum in the human body; which is nothing but the large omentum, having loſt its fat, paſſing over the ſtomach and colon, where it reaſſumes its fat, ſo proceeds, and is firmly attached to the liver, ſpine, &c. The ſtriæ of fat are pretty regularly diſpoſed through it, accompanying the diſtribution of the blood-veſſels to guard them from the preſſure of the ſuperincumbent viſcera.

188 Stomach.

This animal's ſtomach, though pretty much reſembling the human in its ſhape, is ſomewhat differently ſituated. It lies more longitudinal, as indeed all the other viſcera do, to accommodate themſelves to the ſhape of the cavity in which they are contained; that is, its ſacral orifice is much farther down with reſpect to the atlantal than the human: by this means the groſs food has an eaſier paſſage into the duodenum. Again, the fundus of the human ſtomach, when diſtended, ſtands almoſt directly ſternal, which is occaſioned by the little omentum tying it ſo cloſe down to the back bone, &c. at its two orifices; but it not being fixed in that manner in the dog, the fundus remains always dorſal: this alſo anſwers very well the ſhape of the different cavities, the diſtance betwixt the cardia and fundus being greater than that betwixt the two ſides. It ſeems to be much larger in proportion to the bulk of the animal than the human, that it might contain a greater quantity of food at once; which was very neceſſary, ſince this animal cannot at any time get its ſuſtenance as men do. The turbillion is not ſo large, nor is there any coarction forming the *antrum Willeſii*, as in the ſtomach of man. It is conſiderably thicker and more muſcular than ours, for breaking the coheſion of their food, which they ſwallow without ſufficient chewing. Hence it is evident the force of the ſtomach is not ſo great as ſome would have it, nor its contraction ſo violent: otherwiſe that of dogs would be undoubtedly wounded by the ſharp bones, &c. they always take down; for the contraction here is ſtill greater than in the human ſtomach, which is much thinner. The rugæ of the tunica villoſa are neither ſo large, nor ſituated tranſverſely, as in the human, but go from one orifice to the other: the reaſon of which difference is, perhaps, that they might be in leſs danger of being hurt by the hard ſubſtances this creature frequently feeds upon; and for the ſame reaſon there is not the like ſtricture at their pylorus.

189 Inteſtines.

The inteſtines of this animal are proportionally much ſhorter than ours; for the food which theſe creatures moſtly uſe, ſoon diſſolves, and then putrifies; on which account there was no occaſion for a long tract of inteſtines, but on the contrary that it ſhould be quickly thrown out of the body. The ſame is to be obſerved of all the carnivorous animals. The muſcular coat of the inteſtines is alſo thicker and ſtronger than the human, to protrude the contents quickly and accurately.

The valvulæ conniventes are leſs numerous, and in a longitudinal direction; and the whole tract of the alimentary canal is covered with a ſlime, which lubricates the inteſtines, ſaves them from the acrimony of the excrementitious part, and facilitates its paſſage.

190 Duodenum.

The *duodenum* differs conſiderably in its ſituation from the human. For in man it firſt mounts from the pylorus upwards, backwards, and to the right ſide; then paſſes down by the gall-bladder; and, marching over the right kidney and ſuperior part of the pſoas muſcles, makes a curvature upwards; and paſſes over the back bone and vena cava inferior, to the left hypochondrium, where it gets through the omentum, meſentery, and meſocolon, to commence the *jejunum*, being firmly tied down all the way, the biliary and pancreatic ducts entering in at its moſt depending part: Whereas, in the dog, the duodenum is fixed at the pylorus to the concave ſurface of the liver, and hangs looſe and pendulous with the meſentery backwards into the cavity of the abdomen; then turning up again, is fixed to the back bone, where it ends in the jejunum; the bile and pancreatic juice are poured into it at the moſt depending part. Therefore the ſame intention

191 Jejunum.

ſeems

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seems to have been had in view in the formation of this part in both, viz. the giving the chyle, after the liquors of the liver and pancreas are poured into it, a still advantageous course, that so it might be the more intimately blended with the humours before its entry into the jejunum, where the lacteals are very numerous. And thus, by reason of their different posture, the same design (though by a very different order of the parts) is brought about in both.

192 Intestina tenuia.

The other small guts are much the same with ours, only shorter. The great guts are also shorter and less capacious than in the human body; and we take it for a general rule, that all animals that live on vegetable food, have not only their small guts considerably longer, but also their great guts more capacious, than such creatures as feed on other animals. Hence man, from this form of his intestines, and that of the teeth, seems to have been originally designed for feeding on vegetables chiefly; and still the most of his food, and all his drink, is of that class.

The reason of this difference seems to be, that as animal food is not only much more easily reduced into chyle, but also more prone to putrefaction, too long a delay of the juices might occasion the worst consequences. So it was necessary that their receptacles should not be too capacious; but, on the contrary, being short and narrow, might conduce to the seasonable discharge of their contents. Whereas vegetable food being more difficultly dissolved and converted into an animal nature, there was a necessity for such creatures as fed on it to be provided with a long intestinal canal, that this food in its passage might be considerably retarded, and have time to change its quality into one more agreeable to our nature. Besides which there is another advantage which accrues to man in particular, from having his great guts very capacious: for as he is a rational being, and mostly employed in the functions of social life, it would have been very inconvenient as well as unbecoming for him to be too frequently employed in such ignoble exercises; so that, having this large reservoir for his fæces alvinæ, he can retain them for a considerable time without any trouble.

193 Appendix vermiformis.

The *appendix vermiformis* justly enough deserves the name of an *intestinum cæcum* in this subject, though in the human body it does not; and it has probably been from the largeness of this part in this and some other animals, that the oldest anatomists came to reckon that small appendicle in man as one of the great guts. On its internal surface we observe a great number of mucous glands. As all these throw out slime, their principal office would seem to be the procuring a sufficient quantity of that matter for the purposes above mentioned. Still, however, there seems to be some unknown use for this organ in other animals; for the appendicula vermiformis in them is either of great size or of great length. In a rat, it is rather larger than the stomach; in others, as swine, and some of the animals which live on vegetables, it has long convolutions, so that the food must be lodged in it for a long time. Thus, probably, some change takes place in the food, which requires a considerable time to effectuate, and, though unknown to us, may answer very useful purposes to the animal.

The *colon* has no longitudinal ligaments; and consequently this gut is not pursed up into different bags or cells as the human: nor does this intestine make any circular turn round the abdomen; but passes directly across it to the top of the os ileum, where it gets the name of *rectum*.

At the extremity of the *intestinum rectum*, [illegible] of the anus, there are found two bags or pouches, which contain a most abominable fetid mucus of a yellow colour, for which we know no use, unless it serves to lubricate the strained extremity of the rectum, and defend it against the asperity of the fæces, or to give [illegible] some liquor that might otherwise prove hurtful to their bodies. There is nothing analogous to those sacs in the human subject, unless we reckon the mucilaginous glands that are found most frequent and large about the lower part of the rectum.

196 Mesentery.

The *mesentery* is considerably longer than in the human body; that, in his horizontal situation, the intestines may rest securely on the soft cushion of the abdominal muscles. The fat is here disposed in the same way, and for the same reason, as in the omentum. The interstices betwixt the fat are filled with a fine membrane. Instead of a great number of glands [illegible] vagæ to be found in the human mesentery, we find the glands few in number, and those are closely connected together; or there is only one large gland to be observed in the middle of the mesentery of a dog, which, from its imagined resemblance to the pancreas and the name of its discoverer, is called *pancreas Asellii*; but the resemblance, if there is any, depends chiefly on the connexion, the structure being entirely different. The reason why this in man is as it were subdivided into many smaller ones, may possibly be, that as the guts of a human body are proportionally much longer than those of this creature, it would have been inconvenient to have gathered all the *lactea primigeneris* into one place; whereas, by collecting a few of these vessels into a neighbouring gland, the same effect is procured much more easily. Whether the food in this animal needs less preparation in its passage through these glands, is a matter very much unknown to us; though it is certain that some changes really do take place.

197 Asellii.

198 Pancreas.

The *pancreas* in man lies across the abdomen, tied down by the peritonæum; but the capacity of this creature's abdomen not allowing of that situation, it is disposed more longitudinally, being tied to the duodenum, which it accompanies for some way. Its duct enters the duodenum about an inch and a half below the ductus communis.

199 Spleen.

The *spleen* of this animal differs from the human very much, both in figure and situation. It is much more oblong and thin, and lies more according to the length of the abdomen, like the pancreas. Though the spleen of this creature is not firmly tied to the diaphragm (which was necessary in our erect posture to hinder it from falling downwards), yet by the animal's prone position, its dorsal parts being rather higher than the sternal, it comes to be always contiguous to this muscle, and is as effectually subjected to an alternate pressure from its action as the human spleen is.

200 Liver.

The human *liver* has no fissures or divisions, unless we may reckon that small one betwixt the two *pylæ*, where the large vessels enter: Whereas in a dog, and

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all other creatures that have a large flexion in their ſpine, as lions, leopards, cats, &c. the liver and lungs are divided into a great many lobes by deep ſections, reaching the large blood veſſels, which in great motions of the back bone may eaſily ſlide over one another; and ſo be in much leſs danger of being torn or bruiſed, than if they were formed of one entire piece, as we really ſee it is in horſes, cows, and ſuch creatures as have their back bone ſtiff and immoveable. There is here no *ligamentum latum* connecting the liver to the diaphragm, which, in our ſituation, was neceſſary to keep the viſcus in its place: Whereas in this creature, it naturally gravitates forwards, and by the horizontal poſition of the animal is in no danger of preſſing againſt the vena cava; the preventing of which is one uſe generally aſſigned to this ligament in man. Had the liver of the dog been thus connected to the diaphragm, the reſpiration muſt neceſſarily have ſuffered; for, as we ſhall ſee afterwards, this muſcle is here moveable at the centre as well as at the ſides: But in man the liver is fixed to the diaphragm, moſtly at its tendinous part; that is, where the pericardium is fixed to it on the other ſide; ſo that it is in no danger of impeding the reſpiration, being ſuſpended by the mediaſtinum and bones of the thorax. In conſequence of this viſcus being divided into ſo many lobes, it follows, that the hepatic ducts cannot poſſibly join into one common trunk till they are quite out of the ſubſtance of the liver; becauſe a branch comes out from every lobe of the liver; all of which, by their union, form the hepatic duct: whence we are led to conclude, that the hepato-cyſtic ducts, mentioned by former authors, do not exiſt. The gall-bladder itſelf is wanting in ſeveral animals, ſuch as the deer, the horſe, the aſs, &c.; but, in place of it, in ſuch animals, the hepatic duct, at its beginning, is widened into a reſervoir of conſiderable ſize, which may anſwer the ſame purpoſe in them that the gall-bladder does in others.

201 Mediaſtinum.

The *mediaſtinum* in this creature is pretty broad. The pericardium is not here contiguous to the diaphragm, but there is an inch of diſtance betwixt them, in which place the ſmall lobe of the lungs lodges; and by this means the liver, &c. of this animal, though continually preſſing upon the diaphragm, yet cannot diſturb the heart's motion.

202 Heart.

The heart is ſituated with its point almoſt directly ſternally, according to the creature's poſture, and is but very little inclined to the left ſide. Its point is much ſharper, and its ſhape more conoidal, than the human.

203 Vena cava.

The animal has the *vena cava* of a conſiderable length within the thorax, having near the whole length of the heart to run over ere it gets at the *ſinus Lowerianus dexter*. In man, as ſoon as it pierces the diaphragm, it enters the pericardium, which is firmly attached to it, and immediately gets into the *ſinus Lowerianus*; which ſinus, in the human ſubject, by the oblique ſituation of the heart is almoſt contiguous to the diaphragm: and by this we diſcover, that ſeveral authors have taken their delineations of the human heart from brutes; which is eaſily detected by the ſhape and ſituation of the heart, and long vena cava, within the thorax. This was one of the faults of the curious wax-work that was ſhown at London and Paris, which was plainly taken from a cow.

This ſituation of the heart of the creature agrees beſt with the ſhape of its thorax, which is lower than the abdomen. Of Quadrupeds.

204 Aorta aſcendens, improperly ſo called.

The egreſs of the large blood veſſels from the heart is ſomewhat different from the human: For here the right ſubclavian comes off firſt: and as a large trunk runs ſome way upwards before it gives off the left carotid, and ſplits into the carotid and ſubclavian of the right ſide, then the left ſubclavian is ſent off. So that neither here, properly ſpeaking, is there an *aorta aſcendens*, more than in the human; but this name has probably been impoſed upon it from obſerving this in a cow, where indeed there is an aſcending and deſcending aorta.

205 A mechanical account of the ſuperior ſtrength of the right arm, leg, &c.

From this ſpecialty of the diſtribution of the veſſels of the right ſide, which happens, though not in ſo great a degree, in the human ſubject, we may perhaps in ſome meaſure account for the general greater ſtrength, readineſs, or facility of motion, which is obſervable in the right arm. Upon meaſuring the ſides of the veſſels, the ſurface of the united trunk of the right ſubclavian and carotid is leſs than that of the left ſubclavian and carotid, as they are ſeparated. If ſo, the reſiſtance to the blood muſt be leſs in that common trunk than in the left ſubclavian and carotid: But if the reſiſtance be ſmaller, the abſolute force with which the blood is ſent from the heart being equal, there muſt neceſſarily be a greater quantity of blood ſent through them in a given time; and as the ſtrength of the muſcles is, *cæteris paribus*, as the quantity of blood ſent into them in a given time, thoſe of the right arm will be ſtronger than thoſe of the left. Now children, being conſcious of this ſuperior ſtrength, uſe the right upon all occaſions; and thus from uſe comes that great difference which is ſo obſervable. That this is a ſufficient cauſe, ſeems evident from fact; for what a difference is there betwixt the right and the left arm of one who has played much at tennis? View but the arms of a blackſmith and legs of a footman, and you will ſoon be convinced of this effect ariſing from uſing them. But if by any accident the right arm is kept from action for ſome time, the other from being uſed gets the better; and thoſe people are left-handed: For it is not to be imagined, that the ſmall odds in the original formation of the veſſels ſhould be ſufficient to reſiſt the effect of uſe and habit (inſtances of the contrary occur every day); it is enough for our preſent argument, that where no means are uſed to oppoſe it, the odds are ſufficient to determine the choice in favour of the right. Now becauſe it is natural to begin with the leg correſponding to the hand we have moſt power of, this is what gives alſo a ſuperiority to the right leg.

This difference is not peculiar to man, but is ſtill more obſervable in thoſe creatures in whom the ſame mechaniſm does obtain in a greater degree. Do but obſerve a dog at a trot, how he bears forward with his right ſide; or look at him when a-ſcraping up any thing, and you will preſently ſee that he uſes his right much oftener than he does his left foot. Something analogous to this may be obſerved in horſes. It has been the opinion of ſome anatomiſts, that left-handed people, as well as thoſe diſtinguiſhed by the name of *ambidexter* (who uſe both hands alike), have the two carotid and ſubclavian arteries coming off in four diſtinct

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ſtinct trunks from the arch of the aorta: but no appearance of this kind has ever been obſerved in ſuch bodies as have been examined for this purpoſe; though indeed theſe have been but few, and more experience might throw greater light on the ſubject.

206 Diaphragm. The *diaphragm*, in its natural ſituation, is in general more looſe and free than the human; which is owing to its connexion with the neighbouring parts in a different manner from ours. The human *diaphragm* is connected to the pericardium; which again, by the intervention of the mediaſtinum, is tied to the ſternum, ſpine, &c. but here there is ſome diſtance between the diaphragm and pericardium. We obſerve further, that its middle part is much more moveable, and the tendinous parts not ſo large. And indeed it was neceſſary their *diaphragm* ſhould be ſomewhat looſe, they making more uſe of it in difficult reſpiration that man. This we may obſerve by the ſtrong heaving of the flanks of a horſe or dog when out of breath; which correſponds to the riſing of the ribs in us.

207 Sternum. The *ſternum* is very narrow, and conſiſts of a great number of ſmall bones, moveable every way; which always happens in creatures that have a great mobility in their ſpine.

208 Ribs. The ribs are ſtraighter, and by no means ſo convex as the human; whereby in reſpiration the motion forward will very little enlarge their thorax, which is compenſated by the greater mobility of their diaphragm; ſo our thorax is principally enlarged according to its breadth and depth, and theirs according to its length. The want of clavicles, and the conſequent falling in of the atlantal extremities upon the cheſt, may contribute ſomewhat to the ſtraightneſs of the ribs.

209 Kidneys. We come next to diſcourſe of thoſe organs that ſerve for the ſecretion and excretion of urine. And firſt of the kidneys: Which in this animal are ſituated much in the ſame way as in the human ſubject; but have no fat on their inferior ſurface, where they face the abdomen, and are of a more globular form than the human. The reaſon of theſe differences will eaſily appear, if we compare their ſituation and poſture in this animal with thoſe in a man who walks erect. They are placed in them in the ſacral part of the body, ſo are not ſubject to the preſſure of the viſcera, which ſeems to be the principal cauſe of the fatneſs of thoſe organs in us, and perhaps may likewiſe be the cauſe of our being more ſubject to the ſtone than other animals. Hence there is no need of any cellular ſubſtance to ward off this preſſure where there would neceſſarily be fat collected; but the atlantal part of their kidneys is pretty well covered with fat, leſt they ſhould ſuffer any compreſſion from the action of the ribs and ſpine.

210 Papillæ. In the internal ſtructure there is ſtill more conſiderable difference: For the *papillæ* do not here ſend out ſingle the ſeveral *tubuli uriniferi*; but being all united, they hang down in form of a looſe pendulous flap in the middle of the pelvis, and form a kind of partition; ſo that a dog has a pelvis formed within

211 Pelvis. the ſubſtance of the kidney. The only thing that is properly analogous to a pelvis in man is that ſac or dilatation of the ureters formed at the union of the *ductus uriniferi*. The external part of the kidney of a dog ſomewhat reſembles one of the lobes of the kidney of a human fœtus: but in a human adult the appearance is very different; becauſe, in man, from the continual preſſure of the ſurrounding viſcera, the lobes, which in the fœtus are quite diſtinct and ſeparated, concrete, but the original cortical ſubſtance is ſtill preſerved in the internal parts of the kidney. The reaſon of theſe particularities may probably be, that the liquors of this animal, as of all thoſe of the carnivorous kind, being much more acrid than thoſe that live on vegetable food, its urine muſt incline much to an alkaleſcency, as indeed the ſmell and taſte of that liquor in dogs, cats, leopards, &c. evidently ſhow, being fetid and pungent, and therefore not convenient to be long retained in the body. For this end it was proper that the ſecreting organs ſhould have as little impediment as poſſible by preſſure, &c. in the performing their functions; and for that deſign, the mechaniſm of their kidneys ſeems to be excellently adapted: We have moſt elegant pictures in Euſtachius of the kidneys of brutes, delineated as ſuch, with a view to ſhow Veſalius's error in painting and deſcribing them for the human.

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212 Capſulæ atrabilariæ. The *glandulæ* or *capſulæ atrabilariæ* are thicker and rounder than the human, for the ſame reaſon as the kidneys.

213 Ureters. The *ureters* are more muſcular than the human, becauſe of the unfavourable paſſage the urine has through them; they enter the bladder near its large extremity.

214 Bladder. The bladder of urine differs conſiderably from the human; and firſt in its form, which is pretty much pyramidal or pyriform. This ſhape of the dog's bladder is likewiſe common to all quadrupeds, except the ape and thoſe of an erect poſture. In man it is by no means pyriform, but has a large ſac at its dorſal and ſacral part: this form depends entirely on the urine gravitating in our erect poſture to its bottom, which it will endeavour to protrude; but as it cannot yield before, being contiguous to the os pubis, it will naturally ſtretch out where there is the leaſt reſiſtance, that is, at the poſterior and lateral parts; and were it not for this ſac, we could not ſo readily come at the bladder to extract the ſtone either by the leſſer or lateral operation of lithotomy. Moſt anatomiſts have delineated this wrong: ſo much, that we know of none who have juſtly painted it, excepting Mr Cowper in his *Myotomia*, and Mr Butty. It has certainly been from obſerving it in brutes and young children, that they have been led into this miſtake. The ſame cauſe, viz. the gravity of the urine, makes the bladder of a different form in brutes: In their horizontal poſition the neck, from which the urethra is continued, is higher than its fundus; the urine muſt therefore diſtend and dilate the moſt depending part by its weight.

215 Connection. As to its *connexion*, it is faſtened to the abdominal muſcles by a proceſs of the peritoneum, and that membrane is extended quite over it; whereas in us its ſuperior and poſterior parts are only covered by it: hence in man alone the high operation of lithotomy can be performed without hazard of opening the cavity of the abdomen. Had the peritoneum been ſpread over the bladder in its whole extent, the weight of the viſcera in our erect poſture would have to borne upon it, that they would not have allowed any conſiderable quantity of urine to be collected there; but we muſt have been

216 Why the human bladder but [illegible] vered by the perito- [illegible] um

obliged

obliged to discharge its contents too frequently to be consistent with the functions of a social life: Whereas by means of the peritoneum, the urine is now collected in sufficient quantity, the viscera not gravitating this way.

It may be taken for a general rule, that those creatures that feed upon animal food have their bladder more muscular and considerably stronger and less capacious, than those that live on vegetables, such as horses, cows, swine, &c. whose bladder of urine is perfectly membranous, and very large. This is wisely adapted to the nature of their food: For in these first, as all their juices are more acrid, so in a particular manner their urine becomes exalted; which, as its delay might be of very ill consequence, must necessarily be quickly expelled. This is chiefly effected by its stimulating this viscus more strongly to contract, and so to discharge its contents, though the irritation does not altogether depend upon the stretching, but likewise arises from the quality of the liquor. That a stimulus is one of the principal causes of the excretion of urine, we learn from the common saline diuretic medicines that are given, which are dissolved into the serum of the blood, and carried down by the kidneys to the bladder: The same appears likewise from the application of cantharides; or without any of these, when the parts are made more sensible, as in an excoriation of the bladder, there is a frequent desire to make water. Accordingly we find these animals evacuate their urine much more frequently than man, or any other creature that lives on vegetable food. And if these creatures, whose fluids have already a tendency to putrefaction, are exposed to heat or hunger, the liquids must for a considerable time undergo the actions of the containing vessels, and frequently perform the course of the circulation, without any new supplies of food; by which the fluids becoming more and more acrid, the creature is apt to fall into feverish and putrid diseases.

217 A stimulus proved to be a principal cause of the evacuation of the bladder.

218 Vasa spermatica.

Their *spermatic vessels* are within the peritoneum, which is spread over them, and from which they have a membrane like a mesentery, to hang loose and pendulous in the abdomen: whereas in us, they are contained in the cellular part of the peritoneum, which is tensely stretched over them. At their passage out of the lower belly, there appears a plain perforation, or holes; hence the adult quadruped, in this respect, resembles the human fœtus. And from observing this in quadrupeds, has arisen the false notion of *hernia* or *rupture* among authors. This opening, which leads down to the testicle, is of no disadvantage to them, but evidently would have been to us; for from the weight of our viscera, and our continually gravitating upon these holes, we must have perpetually laboured under enteroceles. This they are in no hazard of, since in them this passage is at the highest part of their belly, and in their horizontal posture, the viscera cannot bear upon it: And, to prevent even the smallest hazard, there is a loose pendulous semilunar flap of fat; which serves two uses, as it both hinders the intestines from getting into the passage, and also the course of the fluids from being stopped in the vessels, which is secured in us by the cellular substance and tense peritoneum: And it may be worth while to observe, that

219 Where the false notion of hernia or rupture.

this process remains almost unaltered, even after the animal has been almost exhausted of fat.

There is next a passage quite down into the cavity where the testicles lie. Had the same structure obtained in man, by the constant drilling down of the liquor which is secreted for the lubricating of the guts, we should always have laboured under an hydrocele; but their posture secures them from any hazard of this kind: indeed very fat lap-dogs, who consequently have an overgrown omentum, are sometimes troubled with an epiplocele.

220 Scrotum.

The *scrotum* is shorter and not so pendulous as the human in all the dog kind that want the *vesiculæ seminales*, that the seed at each copulation might the sooner be brought from the testes, thus in some measure supplying the place of the *vesiculæ seminales*: for the course of the seed through the *vasa deferentia* is thus shortened, by placing the secerning vessels nearer the excretory organs. Perhaps its passage is likewise quickened by the muscular power of the vasa deferentia, which is stronger in this creature than in man. The want of *vesiculæ seminales* at the same time explains the reason why this creature is so tedious in copulation. But why these bodies are absent in the dog kind more than in other animals, is a circumstance we know nothing of.

221 The vesiculæ seminales, how supplied.

222 Testes.

The structure of the *testicles* is much the same with the human; as are likewise the *corpus pyramidale*, *varicosum*, or *pampiniforme*, and the *epididymis* or excretory vessel of the testicle. The *vasa deferentia* enter the abdomen where the blood vessels come out; and, passing along the upper part of the bladder, are inserted a little below the bulbous part of the urethra.

223 Penis

The præputium has two muscles fixed to it: one that arises from the sphincter ani, and is inserted all along the *penis*; and this is called *retractor præputii*: But the other, whose office is directly contrary to this, is cutaneous; and seems to take its origin from the muscles of the abdomen, or rather to be a production of their tunica carnosa. The *corpora cavernosa* rise much in the same way as the human: but these soon terminate; and the rest is supplied by a triangular bone, in the inferior part of which there is a groove excavated for lodging the urethra. There are upon the penis two protuberant bulbous fleshy substances, resembling the glans penis in man, at the back of which are two veins, which by the *erectores penis* and other parts are compressed in the time of coition; and the circulation being stopped, the blood distends the large cavernous bodies. After the penis is thus swelled, the vagina by its contraction and swelling of its corpus cavernosum, which is considerably greater than in other animals, gripes it closely; and so the male is kept in action some time contrary to his will, till time be given for bringing a quantity of seed sufficient to impregnate the female: and thus, by that *orgasmus veneris* of the female organs, the want of the *vesiculæ seminales* is in some measure supplied. But as it would be a very uneasy posture for the dog to support himself solely upon his hinder feet, and for the bitch to support the weight of the dog for so long a time; therefore, as soon as the bulbous bodies are sufficiently filled, he gets off and turns averse to her. Had, then, the penis been pliable as in other animals, the urethra must of

224 Coitus.

necessity

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neceſſity have been compreſſed by this twiſting, and conſequently the courſe of the ſeed intercepted; but this is wiſely provided againſt by the urethra's being formed in the hollow of the bone. After the emiſſion of the ſeed, the parts turn flaccid, the circulation is reſtored, and the bulbous parts can be eaſily extracted.

225 Proſtata.

The *proſtata* ſeems here divided into two, which are proportionably larger than the human, and afford a greater quantity of that liquid.

226 Uterus.

The *uterus* of multiparous animals is little elſe but a continuation of their vagina, only ſeparated from it by a ſmall ring or valve. From the *uterus* two long canals mount upon the loins, in which the fœtus are lodged: theſe are divided into different ſacs, which are ſtrongly conſtricted betwixt each fœtus; yet theſe coarctions give way in the time of birth. From theſe go out the *tubæ Fallopianæ*, ſo that the ovaria come to lodge pretty near the kidneys.

227 Mammæ.

The diſpoſition and ſituation of the *mammæ* vary as they bear one or more young. Thoſe of the uniparous kind have them placed between the ſacral extremities, which in them is the higheſt part of their bodies, whereby their young get at them without the inconvenience of kneeling: Nevertheleſs, when the creatures are of no great ſize, and their breaſt large, as in ſheep, the young ones are obliged to take this poſture. In multiparous animals, they muſt have a great number of nipples, that their ſeveral young ones may have room at the ſame time, and theſe diſpoſed over both thorax and abdomen; and the creatures generally lie down when the young are to be ſuckled, that they may give them the moſt favourable ſituation. From this it does not appear to be from any particular fitneſs of the veſſels at certain places for giving a proper nouriſhment to the child, that the breaſts are ſo placed in women as we find them, but really from that ſituation being the moſt convenient both for mother and infant.

Sect. III. *Anatomy of ruminating Animals, and particularly of the Cow.*

The animal whoſe ſtructure we have been examining, being one of thoſe which live chiefly on other animals, had a foot formed for running and ſeizing its prey. But the tribe of ruminating animals have their feet enveloped in a horny covering, fitting them for walking much, as is required of many of them, but totally diſqualifying them for ſeizing living prey.

In theſe animals, the ſpinous proceſſes of the vertebræ of the neck diminiſh in ſize according to the length of the neck; the atlas or firſt vertebra, has its lateral proceſſes flatted and bending forwards, and the mammillary proceſſes of the back of the head are lengthened out; hence, they can move the head with difficulty ſideways or forwards, but the motion of the neck is very extenſive. The ribs are broad and thick. The ſcapula is narrow next the back, and lengthened out towards the neck, and it has neither acromion nor coracoid proceſs. The great tuberoſity near the head of the thigh bone, in the atlantal extremity is very large, and the rough line on the bone very prominent, to give greater room for the inſertion of ſtrong muſcles. The two bones of the fore leg grow together almoſt their whole length, being only diſtinguiſhed from it at the top by a furrow. Hence, the ſide motion of the foot in theſe animals, is almoſt entirely prevented. The haunch bone is ſhaped [illegible] like a hammer, with the anterior part of the ſpine extremely large, and the muſcles ſituated above [illegible] exceeding ſtrong and bulky, as one would ſuppoſe they ought to be, in order to enable theſe animals to riſe with greater power.

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There are no parietal bones in the ſkull of theſe animals, but their place is occupied by one very ſtrong bone in the top of the head; the frontal bone is very large, and forms a large arch overhanging each orbit.

The brain in theſe animals, is much ſmaller in proportion to the reſt of their body, than in man; in the ox it conſtitutes $\frac{1}{868}$ of the weight of the body, whereas in man it amounts to about $\frac{1}{25}$; its general form does not differ much from that of man.

In the eye of the cow the pupil is oblong, rounded at the ends, and the tapetum is of a beautiful green colour, changing to an azure blue; the ſtriæ at the back of the uvea are very large and conſpicuous. The eye of this animal is uſually the ſubject of diſſection in examining the ſtructure of this organ, which it exhibits to great advantage. It is in the organs of digeſtion, that theſe animals differ moſt eſſentially from the other mammalia; theſe therefore deſerve a particular examination.

[illegible] mammalia.

There are no cutting teeth in the upper jaw, but the gums are pretty hard, and the tongue rough. This roughneſs is occaſioned by long ſharp-pointed papillæ, with which the whole ſubſtance of it is covered. Theſe papillæ are turned towards the throat; ſo that by their means the food, having once got into the mouth, is not eaſily pulled back. The animals therefore ſupply the defect of teeth by wrapping their tongue round a tuft of graſs: and ſo, preſſing it againſt the upper jaw, keep it ſtretched, and cut it with the teeth of the under jaw; then, without chewing, throw it down into the gullet, which in theſe creatures conſiſts of a double row of ſpiral fibres croſſing one another. All animals which ruminate muſt have more ſtomachs than one; [illegible] five, ſome ſix; our preſent ſubject has no leſs than four. The food is carried directly down into the firſt, which lies upon the [illegible] left ſide, and is the largeſt of all; it is called *γαστηρ*, *ventriculus*, and *κοιλια*, by way of eminence. It is what is called by the general name [illegible] by the vulgar. There are no rugæ upon its internal ſurface; but inſtead of theſe there are a vaſt number of ſmall blunt-pointed proceſſes, by which the whole has a general roughneſs, and the ſurface is extended to ſeveral times the ſize of the paunch itſelf. The food, by the force of its muſcular coat, and the liquors poured in here, is ſufficiently macerated: after which it is forced up hence by the gullet into the mouth, and there it is made very ſmall by maſtication; this is what is properly called *chewing the cud*, or *rumination*; for which purpoſe the grinders are exceedingly well fitted: for inſtead of being covered with a thin cruſt, the enamel on them conſiſts of perpendicular plates, between which the bone is bare, and conſtantly wearing faſter than the enamel, ſo that the tooth remains good to extreme old age; and by means of theſe teeth the rumination is carried on for a long time without any danger of [illegible]

[illegible] Their

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ſpoiling them. After rumination, the food is ſent down by the gullet into the ſecond ſtomach; for the gullet opens indifferently into both. It ends exactly where the two ſtomachs meet: and there is a ſmooth gutter with riſing edges which leads into the ſecond ſtomach, from thence to the third, and alſo to the fourth: however, the creature has the power of directing it into which it will. Some tell us, that the drink goes into the ſecond; but that might be eaſily determined by making them drink before ſlaughter. The ſecond ſtomach, which is the anterior and ſmaller, is called κηρυθαλος, *reticulum*, *honeycomb*, the *bonnet* or *kings hood*. It conſiſts of a great number of cells on its internal ſurface, of a regular pentagonal figure, like a honeycomb. Here the food is farther macerated; from which it is protruded into the third, called ἐχινος, or *omaſum*, *vulgo* the *manyplies*, becauſe the internal ſurface riſes up into a great many plicæ or folds, and *ſtratum ſuper ſtratum*, according to the length of this ſtomach. Some of theſe plicæ are farther produced into the ſtomach than others; i. e. firſt two long ones on each ſide, and within theſe two ſhorter in the middle, &c. There are numberleſs glandular grains like millet ſeeds diſperſed on its plicæ, from which ſome authors call this ſtomach the *millet*. From this it paſſes into the fourth, whoſe names are πυτερον, *abomaſum*, *caillé*, or the *red*, which is the name it commonly has becauſe of its colour. This much reſembles the human ſtomach, or that of a dog; only the inner folds or plicæ are longer and looſer; and it may alſo be obſerved, that in all animals there is only one digeſtive ſtomach, and that has the ſame coagulating power in the fœtus as the fourth ſtomach in this animal; whence this might not improperly be called the only true ſtomach. *Caillé* ſignifies *curdled*; and hence the French have given that as a name to this fourth ſtomach, becauſe any milk that is taken down by young calves is there curdled. It is this fourth ſtomach, with the milk curdled in it, that is commonly taken for making runnet: but after the bile and pancreatic juice enter, this coagulation is not to be found, which ſhows the uſe of theſe liquors. There are other creatures which uſe the ſame food, that have not ſuch a mechaniſm in their digeſtive organs. Horſes, aſſes, &c. have but one ſtomach, where graſs is macerated, and a liquor for their nouriſhment extracted, and the remainder ſent out by the anus very little altered. From this different ſtructure of the ſtomach in theſe creatures, a ruminant animal will be ſerved with one-third leſs food than another of equal bulk: graſiers are ſufficiently acquainted with this. The reaſon is, that ruminating animals have many and ſtrong digeſtive organs; all their food is fully prepared, and almoſt wholly converted into chyle: But a horſe's ſtomach is not fitted for this; ſo that he requires a much greater quantity of food to extract the ſame nouriſhment.

231 Inteſtines.

The guts of theſe creatures are of a conſiderable length in proportion to the bulk of the body; and this confirms what we ſaid formerly on the ſubject of the inteſtines of a dog, viz. that the length and capacity of the guts were different in different animals, according to the nature of their food.

232 Duodenum.

The *duodenum* is formed here much the ſame way as in a dog, and the general intention kept in view with regard to the mixture of the bile and pancreatic lymph. The great guts here hardly deſerve that name, their diameter differing very little from that of the ſmall; but to compenſate this, they are much longer proportionally than a dog's, being convoluted as the ſmall guts are. The cæcum is very large and long. The digeſtion of the cow, as well as ſome other animals, is accompanied with *rumination*; the intention of which ſeems to be, that the food may be ſufficiently comminuted, and thus more fully acted upon by the ſtomach: for it is not obſerved that a calf ruminates as long as it is fed only upon milk, though the action takes place as ſoon as it begins to eat ſolid food. But it is to be obſerved, that as long as a calf feeds only upon milk, the food deſcends immediately into the fourth ſtomach (which, as has been already mentioned, ſeems only capable of performing the operation of digeſtion) without ſtopping in any of the firſt three. The rumination does not take place till after the animal has eaten a pretty large quantity: after which ſhe lies down, if ſhe can do it conveniently, and begins to chew, though the operation will take place in a ſtanding poſture, if ſhe cannot lie down. In this action a ball is obſerved to riſe from the ſtomach with great velocity, almoſt as if ſhot from a muſket. This ball the animal chews very accurately, and then ſwallows it again, and ſo on alternately, till all the food ſhe has eaten has undergone this operation. This is eaſily explained from the ſtructure of the gullet, which has one ſet of fibres calculated for bringing up the graſs, and another for taking it down.

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By means of rumination, the cow extracts a much larger proportion of nouriſhment from her food than thoſe animals which do not ruminate; and hence ſhe is contented with much worſe fare, and ſmaller quantities of it, than a horſe; hence alſo the dung of cows, being much more exhauſted of its fine parts than horſe-dung, proves much inferior to it as a manure.

233 Spleen.

The *ſpleen* differs not much either in figure or ſituation from that of a dog; but it is a little more firmly fixed to the diaphragm, there not being here ſo much danger of this viſcus's being hurt in the flexions of the ſpine.

234 Liver.

The *liver* is not ſplit into ſo many lobes in this creature as either in a man or dog; which depends on the ſmall motion this creature enjoys in its ſpine, which made ſuch a diviſion needleſs. This alſo confirms what we formerly advanced on this head.

235 Heart.

The ſituation of the *heart* is pretty much the ſame with that of a dog, only its point is rather ſharper: In us, the heart beating continually againſt the ribs, and both ventricles going equally far down to the conſtitution of the apex, it is very obtuſe: but here the apex is made up only of the left ventricle, ſo is more acute.

236 Aorta aſcendens and deſcendens.

The *aorta* in this creature is juſtly divided into *aſcending* and *deſcending*, though this diviſion is ill founded either in a dog or man; and it has certainly been from this ſubject that the older anatomiſts took their deſcriptions when they made this diviſion; for here the aorta divides into two, the aſcending and deſcending.

237 Bladder.

Their urinary bladder is of a pyramidal ſhape. It is very large, and more membranaceous; for the urine

of

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of these creatures not being so acrid as that of carnivorous animals, there was no such occasion for expelling it so soon.

238 Scrotum. Vesiculæ seminales.

The male is provided with a loose pendulous *scrotum*, and consequently with *vesiculæ seminales*. The female organs differ from those of a bitch, mostly as to the form of the cornua uteri, which are here contorted in form of a snail. In this, and all uniparous animals, they contain only part of the secundines; but in bitches, and other multiparous animals, they run straight up in the abdomen, and contain the fœtus themselves.

239 Uterus.

The form of cow's *uterus* differs from the human in having two pretty large cornua. This is common to it with other brutes; for a bitch has two long *cornua uteri*: But these again differ (as being multiparous and uniparous) in this, that in the bitch's cornua the fœtus are contained; whereas here there is only part of the secundines, being mostly the allantois with the included liquor. The muscular fibres of the uterus are more easily discovered; its internal surface has a great number of spongy, oblong, protuberant, glandular bodies fixed to it. These are composed of vessels of the uterus terminating here. In an impregnated uterus we can easily press out of them a chylous mucilaginous liquor; they are composed of a great many processes or digituli, and deep caverns, answering to as many caverns and processes of the placenta. Their resemblance has occasioned the name of *papillæ* to be given them; and hence it was that Hippocrates was induced to believe that the fœtus sucked *in utero*. The papillæ are found in all the different stages of life, in the various stages of pregnancy, and likewise in the unimpregnated state. It is not easy to determine whether the uterus grows thicker or thinner in the time of gestation. The membranes, it is plain (by the stretching of the parts), must be made thinner; but then it is as evident, that the vessels are at that time enlarged, upon which principally the thickness of any part depends; so there seems to be as much gained the one way as lost the other.

240 Cornua uteri.

241 Uterus if thicker in time of gestation.

The *os uteri* is entirely shut up by a glutinous mucilaginous substance, that is common to the females of all creatures when with young: by this the external air is excluded, which would soon make the liquors corrupt: it also prevents the inflammation of the membranes, and the hazard of abortion. By this means also the lips of the womb are kept from growing together, which otherwise they would certainly at this time do. There are mucous glands placed here to secrete this gluten, which on the breaking of the membranes with the contained waters make a soap that lubricates and washes the parts, and makes them easily yield. The first of the proper involucra of the fœtus is the chorion.

242 Chorion.

The *chorion* is a pretty strong firm membrane, on whose external surface are dispersed a great many red fleshy bodies of the same number, size, and structure, with the papillæ, with which they are mutually indented. They have been called *cotyledones*, from Κοτυλη, "cavity". This is greatly disputed by some as a name very improper; but we think without reason, since the surface that is connected to the papillæ is concave, though when separated it appears rather convex. To shun all dispute, they may be called properly enough

243 Cotyledones.

placentulæ, since they serve the same use as the placenta in women. The separation of these from the papillæ without any laceration, and our not being able to inject coloured liquors from the vessels of the glands of the uterus into the placentulæ, seem to prove beyond a reply, that there can be here no anastomoses betwixt the vessels. On their coat run a great number of vessels that are sent to the several placentulæ, on the external side next to the uterus; whereas in creatures that have but one placenta, as in the human subject, cats, dogs, &c. the adhesion is somewhat firmer: The placentæ are likewise joined to the papillæ in the cornua uteri. We shall next give the history of the *allantois*.

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244 Allantois.

This is a fine transparent membrane contiguous to the former. It is not a general involucrum of the fœtus in the mother, for it covers only a small part of the amnios. It is mostly lodged in the cornua uteri. In mares, bitches, and cats, it surrounds the amnios, being everywhere interposed betwixt it and the chorion. In sheep and goats it is the same as in this animal; and in swine and rabbits it covers still less of the amnios. This sac is probably formed by the dilatation of the urachus, which is connected at its other end to the fundus of the bladder, through which it receives its contents; and a great quantity of urine is commonly found in it. The membrane is doubled at the extremity of the canal, to hinder the return of the urine back into the bladder. Its vessels are so excessively fine and few, that we cannot force an injected liquor farther than the beginning of this coat. This membrane is so far analogous to the cuticula, as not to be liable to corruption, or easily irritated by acrid liquors. The existence of this membrane in women has been very warmly disputed on both sides. Those who are against its existence deny they could ever find it; and, allowing it were so, allege, that since the urachus is impervious, as appears by our not being able to throw liquors from the bladder into it, or *vice versa*, it cannot serve the use that is agreed by all it does serve in beasts; and therefore in the human body there is no such thing. But if we consider, on the other hand, first, that there seems to be the same necessity for such a reservoir in man as in other animals; secondly, that we actually find urine contained in the bladder of the human fœtus: thirdly, that urine has been evacuated at the navel when the urethra was stopped, which urine without this conduit would have fallen into the cavity of the abdomen: fourthly, that midwives have pretended to remark two different sorts of waters come away at the time of birth: and, lastly, that Dr Littre and Dr Hale have given in this membrane of a human subject, with all the other secundines curiously prepared, the one to the Royal Academy at Paris, the other to the Royal Society at London; by which societies their respective accounts are attested; not to mention Verheyen, Heister, Keill, &c. who affirm their having seen it; and Albinus is said to have shown to his college every year a preparation of it: On all these accounts it seems most probable, that there is such a membrane in the human body.

245 The arguments for and against the human allantois.

246 Amnios.

The third proper integuments of the fœtus is the *amnios*. It is thinner and firmer than the chorion; it has numerous ramifications of the umbilical vessels spread upon it, the lateral branches of which separate a liquor into its cavity. This is the proper liquor of the amnios;

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nios; which at firſt is in a ſmall quantity, afterwards increaſes for ſome months, then again decreaſes; and in a cow near her time, the quantity of this liquor is not above a pound. This membrane does not enter the *cornua uteri* in this creature, being confined to the body of the uterus; whereas the allantois occupies chiefly its cornua. But for what further relates to the ſtructure of the involucra, with the nature of the liquors contained in them, we muſt refer to the ſecond volume of Medical Eſſays, from page 121, where you have the ſum of all we know of this matter.

There are here two *venæ umbilicales*, and but one in the human ſubject; becauſe the extreme branches coming from the ſeveral placentulæ could not unite ſo ſoon as they would have done had they come all from one cake, as in the human. Of Birds.

There is a ſmall round fleſhy body that ſwims in the urine of this creature, mares, &c. which is the *hippomanes* of the ancients. Several idle opinions and whims have been entertained as to its uſe; but that ſeems to be ſtill unknown, or how it is generated or nouriſhed, for it has no connexion with the fœtus or placentulæ.

CHAP. V. THE ANATOMY OF BIRDS.

SECT. I. *Of Birds in general.*

THE ſtructure of the greater part of theſe animals is obviouſly calculated for the moſt rapid of all motions. That part of the vertebral column which conſtitutes the back is immovable; but the neck is exceedingly flexible, the vertebræ being articulated together, not by flat ſurfaces, but by portions of cylinders, but in ſuch a manner as that the more atlantal vertebræ can move only forward, the more ſacral only backward. The neck is generally long, but its length differs in various ſpecies, being determined by their manner of life and other circumſtances. The head is ſmall in proportion to the body, and generally ends in a ſharp bill, that the animal may the more eaſily make its way through the air. The breaſt bone is ſhaped like a ſhield, and has in the middle a large and broad ſpine, like the keel of a ſhip, thus forming a conſiderable extent of ſurface for the inſertion of muſcles. This ridge is moſt conſpicuous in birds that fly. On each ſide of the breaſt bone, next the wings, are two bones, which correſpond to the clavicle or collar bone in man, by which the wings are connected to the breaſt bone, and between theſe is a very elaſtic bone with two horns, ſhaped like a V, and commonly known by the name of *merry-thought*. The wings are compoſed in a manner very ſimilar to the atlantal extremity in the mammalia, and are generally divided into two portions; the *wing*, to which the principal muſcles are attached, and the *pinion*.

247 Their wings, how furniſhed.

Fowls have the ſtrongeſt muſcles of their whole body inſerted into their wings; whence by the way we may obſerve, that it is altogether impoſſible for man to buoy himſelf up into the air like birds, even though he had proper machines in place of wings, unleſs he were likewiſe provided with muſcles ſtrong enough for moving them, which he has not.

248 Why not placed in the middle of the body.

In the next place, their wings are not placed in the middle of their bodies, but a good deal farther forwards; whence it would at firſt view appear, that their heads would be erect, and their poſterior parts moſt depending when raiſed in the air; but by ſtretching out their heads which act upon the lever of a long neck, they alter their centre of gravity pretty much; and alſo by filling the ſacs or bladders in the inſide of their abdomen with air, and expanding their tail, they come to make the poſterior part of their bodies conſiderably higher; and thus they fly with their bodies nearly in a horizontal ſituation. Hence we find, that if their necks are kept from being ſtretched out, or if you cut away their tails, they become incapable of flying any conſiderable way.

The largeneſs of the wings in different fowls varies according to the wants of the creature. Thus birds of prey, who muſt fly a conſiderable way to provide their food, have large ſtrong wings; whereas domeſtic birds, who find their nouriſhment almoſt everywhere, have very ſhort and but ſmall wings. Their tail is of uſe in aſſiſting to raiſe them in the air; though the chief purpoſe of it is to ſerve as a rudder in guiding their flight, whilſt they uſe their wings as we do oars in putting forward a boat. The beſt account of this manner of progreſſion of fowls is given by Alfonſus Borellus, in his treatiſe *De Motu Animalium*; and in the *Religious Philoſopher* we have Borelli's doctrine ſtripped pretty much of its mathematical form. The ſacral extremities are ſituated ſo far back, as to make us at firſt think they would be in continual hazard of falling down forwards when they walk: but this is prevented by their holding up their head and neck, ſo as to make the centre of gravity fall upon the feet; and when they have occaſion for climbing up a ſteep place they ſtretch out their heads and necks forward, eſpecially if they are ſhort-legged, the better to preſerve properly the balance of the body. Thus we may obſerve a gooſe entering a barn-door, when generally there is an aſcending ſtep, to ſtretch out its neck, which before was raiſed, and incline its body forwards. This is laughed at by the common people, who aſcribe it to a piece of folly in the gooſe, as if afraid of knocking its head againſt the top of the door.

249 A peculiar mechaniſm in the toes of fowls.

Carnivorous birds are provided with ſtrong crooked claws for catching their prey: water fowls uſe them for ſwimming; and, principally for this purpoſe, have a ſtrong firm membrane interpoſed betwixt the toes. There is a beautiful mechaniſm to be obſerved in the toes of fowls, which is of conſiderable uſe to them. For their toes are naturally drawn together, or bend, when the foot is bended: this is owing to the ſhortneſs of the tendons of the toes, which paſs over them, which is analogous to our heel; and that the toes are ſet in the circumference of a circle, as our fingers are: Hence, when the foot is bended, the tendons muſt conſequently be much ſtretched; and, ſince they are inſerted into the toes, muſt of neceſſity bend them when the foot is bended; and when the foot is extended, the flexors of the toe are again relaxed, and they are therefore expanded. This is alſo of great uſe to different kinds of fowls; thus the hawk deſcending

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ſcending with his legs and feet extended, ſpreads his talons over his prey; and the weight of his body bending his feet, the toes are contracted, and the prey is ſeized by the talons. This is alſo of great uſe to water fowls: for had there been no ſuch contrivance as this, they muſt have loſt as much time when they pulled their legs in as they had gained by the former ſtroke: but, as the parts are now framed, whenever the creature draws in its foot, the toes are at the ſame time bended and contracted into leſs ſpace, ſo that the reſiſtance made againſt the water is not near ſo great as before: on the contrary, when they ſtretch their foot, their toes are extended, the membrane betwixt them expanded, and conſequently a greater reſiſtance made to the water. Again, ſuch fowls as live moſtly in the air, or have occaſion to ſuſtain themſelves on branches of trees in windy weather, and even in the night-time when aſleep, while all their muſcles are ſuppoſed to be in a ſtate of relaxation, have only to lean down the weight of their bodies, and their toes continue bended without any muſcles being in action; and whenever they would diſentangle themſelves, they raiſe up their bodies, by which their feet, and conſequently their toes, are extended.

250 Their covering.

Fowls have a particular covering of feathers different from all other creatures, but exactly well ſuited to their manner of life: for it not only protects them from the injuries of the weather, but ſerves them in their progreſſion through that thin aerial element they are, for the moſt part, employed in; and as fowls live much in the water, their feathers being continually beſmeared with an oily liquor, keeps the water from ſoaking into their ſkins, and ſo prevents the bad effects which it would infallibly otherwiſe produce.

The brain in birds is large in proportion to their heads; it has neither *corpus callofum*, *fornix*, nor *corpora quadrigemina*. Hence we may conclude, that theſe parts are not eſſential to life, nor probably to reaſon.

The organ of ſmelling is placed at the baſe of the beak; the noſtrils are ſometimes naked, ſometimes concealed by feathers, and by a ſmall ſcale, or even by a fleſhy ſubſtance.

251 The organ of ſmelling.

Their organ of *ſmelling* is very large, and well provided with nerves; hence they have this ſenſation very acute. Ravens and other birds of prey give a ſure proof of this, by their being able to find out their prey, though concealed from their ſight and at a conſiderable diſtance.

Thoſe birds that grope for their food in the waters, mud, &c. have large nerves, which run quite to the end of their bills, by which they find out and diſtinguiſh their food.

252 Eye.

The anterior part of their *eyes* (inſtead of having the ſclerotic coat continued, ſo as to make near a ſphere as in us) turns all of a ſudden flat; ſo that here the ſclerotic makes but half a ſphere; and the cornea riſes up afterwards, being a portion of a very ſmall and diſtinct ſphere: ſo that in theſe creatures there is a much greater difference betwixt the ſclerotic and cornea than in us. Hence their eyes do not jut out of their heads, as in man and quadrupeds. As moſt of theſe creatures are continually employed in hedges and thickets, therefore, that their eyes might be ſecured from theſe injuries, as well as from too much light when flying in the face of the ſun, there is a very elegant mechaniſm in their eyes. A membrane riſes from the internal canthus, which at pleaſure, like a curtain, can be made to cover the whole eye; and this by means of a proper muſcle that riſes from the ſclerotic coat, and paſſing round the optic nerves, runs through the *muſculus oculi attollens* (by which however the optic nerves are not compreſſed) and palpebra, to be inſerted into the edge of this membrane. Whenever this muſcle ceaſes to act, the membrane by its own elaſticity again diſcovers the eye. This covering is neither pellucid nor opaque, both which would have been equally inconvenient; but, being ſomewhat tranſparent, allows as many rays to enter as to make any object juſt viſible, and is ſufficient to direct them in their progreſſion. By means of this membrane it is that the eagle is ſaid to look at the ſun.

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253 Bourſe noire. Its deſcription and uſes.

Beſides, all birds have another particularity, the uſe of which is not ſo well underſtood; and that is, a pretty long black triangular purſe, riſing from the bottom of their eye juſt at the entry of the optic nerve, and ſtretched out into their vitreous humour, and one would imagine it gave ſome threads to the cryſtalline. To this the French (who probably were the firſt who took notice of it in their diſſections before the Royal Academy) gave the name of *bourſe noire*. This may poſſibly ſerve to ſuffocate ſome of the rays of light, that they may ſee objects more diſtinctly without hurting their eyes. It has a connexion with the vitreous, and ſeems to be joined alſo to the cryſtalline humour. If we ſuppoſe it to have a power of contraction (which may be as well allowed as that of the iris), it may ſo alter the poſition of the vitreous and cryſtalline humours, that the rays from any body may not fall perpendicularly upon the cryſtalline: and this ſeems to be neceſſary in them, ſince they cannot change the figure of the anterior part of their eye ſo much as we can do: and as this animal is expoſed often to too great a number of rays of light, ſo they have no tapetum, but have the bottom of their eye wholly black on the retina; and in conſequence of this, fowls ſee very ill in the dark.

254 Organ of hearing.

They have no external ear; but in place of it a tuft of very fine feathers covering the *meatus auditorius*, which eaſily allows the rays of ſound to paſs them, and likewiſe prevents duſt or any inſect from getting in. An external ear would have been inconvenient in their paſſing through thickets, and in flying, &c. A liquor is ſeparated in the external part of the ear, or *meatus auditorius*, to lubricate the paſſage, and further prevent the entrance of any inſects, &c. The *membrana tympani* is convex externally; and no muſcles are fixed to the bones of their ear, which are rather of a cartilaginous conſiſtence: any tremulous motions impreſſed on the air are communicated in theſe creatures merely by the ſpring and elaſticity of theſe bones; ſo probably, the membrane is not ſo ſtretched as in the human ear by muſcles. The ſemicircular canals are very diſtinct, and eaſily prepared.

255 The variety in the beaks of fowls. Its uſes, &c.

The roſtrum, bill, or beak of fowls, is compoſed of two mandibles; and, as in quadrupeds, the upper one has no motion but what it poſſeſſes in common with the head. But parrots are an exception to this rule; for they can move the upper mandible at pleaſure: this is exceedingly convenient, as it enables them to lay hold of whatever comes in their way. Carnivorous

Of Birds. fowls have their beaks long, ſharp, and crooked; the domeſtic fowls, ſuch as the hen kind, &c. have ſtrong ſhort beaks, commodiouſly fitted to dig up and break their food; the water fowls, again, have long or very broad ſcoop-like beaks, which is moſt convenient for them.

The other circumſtances in which the ſtructure of birds differs from that of other animals, particularly as to the organs of digeſtion, reſpiration, and generation, will be beſt explained by deſcribing them in an individual inſtance; and we ſhall ſelect for this purpoſe the domeſtic cock, taking an opportunity of contraſting the viſcera of a carnivorous bird with thoſe of this ſpecies as a granivorous bird.

Sect. II. *Anatomy of a Cock.*

Though this kind of birds live upon food ſomewhat ſimilar to that of man, yet as they have no teeth to ſeparate or break down this food, we ſhould expect to find ſomething to compenſate for the want of teeth, ſomething remarkable in the organs of digeſtion: we ſhall therefore begin with theſe parts.

256 Crop. The *gullet* of this creature runs down its neck, ſomewhat inclined to the right ſide; and terminates in a pretty large membranous ſac, which is the ingluvies or crop, where the food is macerated and diſſolved by a liquor ſeparated by the glands, which are eaſily obſerved everywhere on the internal ſurface of this bag. The effect of this maceration may be very well obſerved in pigeons, who are ſometimes in danger of being ſuffocated by the peaſe, &c. they feed upon, ſwelling to ſuch an immenſe bulk in their ingluvies, that they can neither get upwards nor downwards. If it be a favourite fowl, it might be preſerved by opening the ſac, taking out the peaſe, and ſewing up the wound.

257 Ventriculus ſuccenturiatus ſeu infundibulum. The food getting out of this ſac goes down by the remaining part of the gullet into the *ventriculus ſuccenturiatus*, or *infundibulum Peyeri*, which is a continuation of the gullet with more numerous glands, which ſeparate a liquor to dilute the food ſtill more, which at length gets into the true ſtomach or gizzard, *ventriculus callioſus*, which conſiſts of two very ſtrong muſcles covered externally by a tendinous aponeuroſis, and lined on the inſide by a very thick firm membrane, which we evidently diſcover to be a production of the cuticula. This might have been proved in ſome meaſure *à priori*, from taking notice, that this membrane, which in chicks is only a thin ſlight pellicle, by degrees turns thicker and ſtronger the more attrition it ſuffers: but there is no other animal ſubſtance, ſo far as we know, which grows more hard and thick by being ſubjected to attrition, excepting the cuticula.—

258 Epidermis lines the internal ſurface of all the cavities and veſſels of the human body. Hence may be drawn ſome kind of proof of what has been affirmed concerning the tunica villoſa of the ſtomach and inteſtines in the human body, viz. that it was in part a continuation of the epidermis; nay, all the hollow parts of the body, even arteries, veins, &c. ſeem to be lined with a production of this membrane, or one analogous to it. The uſe of the internal coat of the ſtomach of fowls is to defend the more tender parts of that viſcus from the hard grains and little ſtones theſe creatures take down. The uſe of the gizzard is to compenſate for the want of teeth; and it is well fitted for this purpoſe, from the great ſtrength which it poſſeſſes. Of Birds.

The digeſtion of theſe animals is performed merely by attrition, as is evinced by many experiments; and it is further aſſiſted by the hard bodies they ſwallow. We ſee them daily take down conſiderable numbers of the moſt ſolid rugged little flints they find; and theſe can ſerve for no other purpoſe than to help the trituration of their aliments. After theſe pebbles, by becoming ſmooth, are unfit for this office, they are thrown up by the mouth. Hence fowls that are long confined, though ever ſo well fed, turn lean for want of theſe ſtones to help their digeſtion. This was put beyond all diſpute by Mr Tauvry, who gave a piece of metal to an oſtrich, convex on one ſide and concave on the other, but carved on both; and opening the creature's body ſome time after, it was found, that the carving on the convex ſide was all obliterated, while the engraved character remained the ſame as before on the concave ſide, which was not ſubjected to the ſtomach's preſſure: which could not have happened had digeſtion been performed by a menſtruum, or any other way whatſoever; but may be eaſily ſolved by allowing a ſimple mechanical preſſure to take place. We are, however, by no means to conclude from this, as ſome have too raſhly done, that in the human body digeſtion is performed by ſimple attrition; otherwiſe we may, with equal ſtrength of reaſon, by as good arguments drawn from what is obſerved in fiſhes, prove that the aliments are diſſolved in our ſtomachs by the action of a menſtruum. But this method of reaſoning is very faulty; nor can it ever bring us to the true ſolution of any philoſophical or medical problem. It is very plain, ſince the ſtructure of the parts of the human ſtomach are ſo very different from that of this creature, that it is fooliſh and unreaſonable to imagine both of them capable of producing the ſame effects. At each end of the ſtomach, there are as it were two particular ſacs of a different texture from the reſt of the ſtomach, not conſiſting of ſtrong muſcular fibres; they ſeem to be receptacles for the ſtones (eſpecially at the end which is fartheſt from the orifice), while the digeſted aliment is protruded into the inteſtines.

Spallanzani, however, has lately found, that pebbles are not at all neceſſary to the trituration of the food of theſe animals. At the ſame time, he does not deny, that when put in motion by the gaſtric muſcles, they are capable of producing ſome effect on the contents of the ſtomach; but is inclined to believe, that they are not ſought for and ſelected by deſign, as many ſuppoſe, but becauſe they frequently happen to be mixed with the food.

259 Duodenum. The *duodenum* begins pretty near the ſame place at which the gullet enters; yet notwithſtanding the vicinity of theſe two tubes, the aliments are in no danger of getting out before they are perfectly digeſted, by reaſon of a protuberance betwixt the orifices; and in thoſe creatures who have ſuch a ſtrong muſcular ſtomach, it is a matter of great indifference whether the entry of the gullet or pylorus be higheſt, provided that the entry from the gullet does not allow the food to regurgitate, ſince the force of the ſtomach can eaſily protrude it towards the duodenum. This gut is moſtly in the right ſide, and hangs pendulous in their abdomen, having

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having its two extremities fixed to the liver. The *ductus choledochus* enters near its termination, where it mounts up again to be fixed to the liver; and left, by the contraction of the inteſtines, the bile ſhould paſs over without being intimately blended with the chyle, that duct enters downwards, contrary to the courſe of the food, and contrary to what is obſerved in any of the animals we have yet mentioned. But ſtill the general intention is kept in view, in allowing theſe juices the faireſt chance of being intimately blended with the food.

260 Duct is choledochus.

261 Inteſtina tenua.

The *ſmall guts* are proportionally longer than thoſe of carnivorous birds, for the general cauſe already aſſigned. At the end of the ilium they have two large *inteſtina cæca*, one on each ſide, four or five inches long, coming off from the ſide of the rectum, and aſcending; and we find them containing part of the food: Theſe ſerve as reſervoirs to the feces; which, after ſome delay there, regurgitate into what ſoon becomes the rectum; which, together with the excretories of urine and organs of generation, empties itſelf into the common cloaca. The ſmall inteſtines are connected by a long looſe meſentery, which has little or no fat accompanying the blood veſſels, there being no hazard of the blood's being ſtopped.

262 Carnivorous birds.

The principal difference to be obſerved in carnivorous birds is in their chylopoietic viſcera, which may be accounted for from their different way of life.

263 Ingluvies.

Immediately under their clavicles, you will obſerve the œſophagus expanded into their *ingluvies*, which is proportionally leſs than in the granivorous kind, ſince their food does not ſwell ſo much by maceration; and for the ſame reaſon, there is a leſs quantity of a menſtruum to be found here.

264 Ventriculus ſuccenturiatus.

They have alſo a *ventriculus ſuccenturiatus*, plentifully ſtored with glands, ſituated immediately above their ſtomach, which we ſee here is thin and muſculomembranous, otherwiſe than in the granivorous kind: and this difference, which is almoſt the only one we ſhall find betwixt the two different ſpecies of fowls, is eaſily accounted for from the nature of their food, which requires leſs attrition, being eaſier of digeſtion than that of the other kind; nevertheleſs, it ſeems requiſite it ſhould be ſtronger than the human, to compenſate the want of abdominal muſcles, which are here very thin.

265 Inteſtina.

The ſame mechaniſm obtains in this creature's *duodenum* that we have hitherto obſerved. As being a carnivorous animal, its guts are proportionally ſhorter than thoſe of the granivorous kind: for the reaſon firſt given, viz. its food being more liable to corrupt, therefore not proper to be long detained in the body; and for that reaſon it has no *inteſtina cæca*, of which the other ſpecies of fowls have a pair. The difference in their wings, backs, and claws, is obvious; and has been already in ſome meaſure obſerved.

266 Pancreas.

The *pancreas* in this creature lies betwixt the two folds of the duodenum, and ſends two or three ducts into this gut pretty near the biliary.

267 The ſpleen.

The *ſpleen* is here of a round globular figure, ſituated between the liver and ſtomach; and betwixt theſe and the back bone it enjoys the ſame properties as in other animals, viz. large blood veſſels, &c. All its blood is ſent into the *vena portarum*, and has a perpetual conquaſſation. It has no excretory, as far as we know. Their *liver* is divided into two equal lobes by a pellucid membrane, running according to the length of their body: and hence we may obſerve, that it is not peculiar to that bowel to lie on the right ſide; which is ſtill more confirmed by what we obſerve in theſe, where the greateſt part of it lies in the left ſide.

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268 Liver.

The ſhape of their *gall bladder* is not much different from that of quadrupeds; but is thought to be longer in proportion to the ſize of the animal, and is farther removed from the liver.

lis.

270 Cor.

The principal difference to be remarked in their *heart*, is the want of the *valvula tricuſpidalis*, and their place being ſupplied by one fleſhy flap.

271 Pulmones.

The *lungs* are not looſe within the cavity of the thorax, but fixed to the bone all the way; neither are they divided into lobes, as in thoſe animals that have a large motion in their ſpine. They are two red ſpongy bodies, covered with a membrane that is pervious, and which communicates with the large veſicles or air-bags that are diſperſed over their whole abdomen; which veſicles, according to Dr Monro, ſerve two very conſiderable uſes. The one is to render their bodies ſpecifically light, when they have a mind to aſcend and buoy themſelves up when flying, by diſtending their lungs with air, and alſo ſtraiten their windpipe, and ſo return the air. Secondly, They ſupply the place of a muſcular *diaphragm* and ſtrong abdominal muſcles; producing the ſame effects on the ſeveral contained viſcera, as theſe muſcles would have done, without the inconvenieney of their additional weight; and conducing as much to the excluſion of the egg and feces.

uſes.

272 The veſicles in the abdomen.

273 The diaphragm, how ſupplied.

Dr Hunter has made ſome curious diſcoveries relative to theſe internal receptacles of air in the bodies of birds. Some of them are lodged in the fleſhy parts, and ſome in the hollow bones; but all of them communicate with the lungs. He informs us, that the air cells which are found in the ſoft parts have no communication with the cellular membrane which is common to birds as well as other animals. Some of them communicate immediately with each other; but all of them by the intervention of the lungs as a common centre. Some of them are placed in cavities, as the abdomen; others in the interſtices of parts, as about the breaſt. The bones which receive air are of two kinds; ſome of them divided into innumerable cells; others hollowed out into one large canal. They may be diſtinguiſhed from ſuch as do not receive air, by having leſs ſpecific gravity; by being leſs vaſcular; by containing little oil; by having no marrow nor blood in their cells; by having leſs hardneſs and firmneſs than others; and by the paſſage for the air being perceivable.

The mechaniſm by which the lungs are fitted for conveying air to theſe cavities is, their being attached to the diaphragm, and connected alſo to the ribs and ſides of the vertebræ. The diaphragm is perforated in ſeveral places by pretty large holes, allowing a free paſſage of air into the abdomen. To each of theſe holes is attached a diſtinct membranous bag, thin and tranſparent. The lungs open at their interior part into membranous cells, which lie upon the ſides of the pericardium, and communicate with the cells of the ſternum. The ſuperior parts of the lungs open into cells of a looſe net-work, through which the windpipe and gullet paſs. When theſe cells are diſtended

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with air, it indicates paſſion, as in the caſe of the turkey-cock, pouting-pigeon, &c.

Theſe cells communicate with others in the axilla, and under the large pectoral muſcle; and thoſe with the cavity of the os humeri, by means of ſmall openings in the hollow ſurface near the head of that bone. Laſtly, The poſterior edges of the lungs have openings into the cells of the vertebræ, ribs, os ſacrum, and other bones of the pelvis, from which the air finds a paſſage to the cavity of the thigh bone.

Concerning the uſe of theſe cavities the doctor conjectures, that they are a kind of appendage to the lungs; and that, like the bags continued through the bellies of amphibious animals, they ſerve as a kind of reſervoirs of air. They aſſiſt birds during their flight, which muſt be apt to render frequent reſpiration difficult. He farther inſinuates, that this conſtruction of the organs of reſpiration may aſſiſt birds in ſinging; which, he thinks, may be inferred from the long continuance of ſong between the breathings of a canary bird. On tying the windpipe of a cock, the animal breathed through a canula introduced into his belly; another through the os humeri, when cut acroſs; and a hawk through the os femoris. In all theſe caſes the animal ſoon died. In the firſt, the doctor aſcribes the death to an inflammation of the bowels; but in the laſt, he owns it was owing to difficult breathing. What took place, however, was ſufficient to ſhow that the animals did really breathe through the bone.

When we examine the upper end of the *trachea*, we obſerve a *rima glottidis* with muſcular ſides, which may act in preventing the food or drink from paſſing into the lungs: for there is no *epiglottis* as in man and quadrupeds.

274 Windpipe.

The *windpipe*, near where it divides, is very much contracted; and their voice is principally owing to this coarctation. If you liſten attentively to a cock crowing, you will be ſenſible that the noiſe does not proceed from the throat, but deeper; nay, this very pipe, when taken out of the body, and cut off a little after its diviſion, and blown into, will make a ſqueaking noiſe, ſomething like the voice of theſe creatures. On each ſide, a little higher than this contraction, there is a muſcle ariſing from the ſternum, which dilates the trachea. The cartilages, of which the pipe is compoſed in this animal, go quite round it; whereas in man and quadrupeds they are diſcontinued for about one-fourth on the back part, and the intermediate ſpace is filled up by a membrane. Neither is the trachea ſo firmly attached to their vertebræ as in the other creatures we have examined. This ſtructure we ſhall find of great ſervice to them, if we conſider, that had the ſame ſtructure obtained in them as in us, their breath would have been in hazard of being ſtopped at every flexion or twiſting of their neck, which they are frequently obliged to. This we may be ſenſible of by bending our necks conſiderably on one ſide, upon which we ſhall find a great ſtraitneſs and difficulty of breathing; whereas their trachea is better fitted for following the flexions of the neck by its looſe connexion to the vertebræ.

In place of a *muſcular diaphragm*, this creature has nothing but a thin membrane connected to the pericardium, which ſeparates the thorax and abdomen. But beſides this, the whole abdomen and thorax are divided by a longitudinal membrane or *mediaſtinum* connected to the lungs, pericardium, liver, ſtomach, and to the fat lying over their ſtomach and guts, which is analogous to an *omentum*, and ſupplies its place.

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275 Lymphatic ſyſtem.

The *lymphatic ſyſtem* in birds conſiſts, as in man, of lacteal and lymphatic veſſels, with the thoracic duct.

The lacteals, indeed, in the ſtricteſt ſenſe, are the lymphatics of the inteſtines; and, like the other lymphatics, carry only a tranſparent lymph; and inſtead of one thoracic duct, there are two, which go to the jugular veins. In theſe circumſtances, it would ſeem that birds differ from the human ſubject, ſo far at leaſt as we may judge from the diſſection of a *gooſe*, the common ſubject of this inquiry, and from which the following deſcription is taken.

The lacteals run from the inteſtines upon the meſenteric veſſels: thoſe of the duodenum paſs by the ſide of the pancreas; afterward they get upon the cæliac artery, of which the ſuperior meſenteric is a branch. Here they are joined by the lymphatics of the liver, and then they form a plexus which ſurrounds the cæliac artery. Here alſo they receive a lymphatic from the gizzard, and ſoon after another from the lower part of the gullet. At the root of the cæliac artery they are joined by the lymphatics from the glandulæ renales, and near the ſame part by the lacteals from the other ſmall inteſtines, which veſſels accompany the lower meſenteric artery; but, before they join thoſe from the duodenum, receive from the rectum a lymphatic, which runs from the blood veſſels of that gut. Into this lymphatic ſome ſmall veſſels from the kidneys ſeem to enter at the root of the cæliac artery. The lymphatics of the ſacral extremities probably join thoſe from the inteſtines. At the root of the cæliac artery and contiguous part of the aorta, a net-work is formed by the veſſels above deſcribed. From this net-work ariſe two thoracic ducts, of which one lies on each ſide of the ſpine, and runs obliquely over the lungs to the jugular vein, into the inſide of which it terminates, nearly oppoſite to the angle formed by the vein and this ſubclavian one. The thoracic duct of the left ſide is joined by a large lymphatic, which runs upon the gullet. The thoracic ducts are joined by the lymphatics of the neck, and probably by thoſe of the wings, where they open into the jugular veins. The lymphatics of the neck generally conſiſt of two large branches, on each ſide of the neck, accompanying the blood veſſels; and theſe two branches join near the lower part of the neck, and form a trunk which runs cloſe to the jugular vein, and opens into a lymphatic gland; from the oppoſite ſide of this gland a lymphatic comes out, which ends in the jugular vein.

On the left ſide, the whole of this lymphatic joins the thoracic duct of the ſame ſide; but, on the right one, part of it goes into the inſide of the jugular vein a little above the angle; while another joins the thoracic duct, and with that duct forms a common trunk, which opens into the inſide of the jugular vein, a little below the angle which that vein makes with the ſubclavian. This ſyſtem in birds differs moſt from that of quadrupeds, in the chyle being tranſparent and colourleſs, and in there being no viſible lymphatic glands, neither in the courſe of the lacteals, nor in that of the lymphatics of the abdomen, nor near the thoracic ducts.

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276 Kidneys.

The *kidneys* lie in the hollow excavated in the ſide of the back-bone, from which there is ſent out a bluiſh-coloured canal running along by the ſide of the *vas deferens*, and terminating directly in the common cloaca. This is the *ureter*, which opens by a peculiar aperture of its own, and not at the penis. Fowls having no urinary bladder, it was thought by ſome they never paſſed any urine, but that it went to the nouriſhment of the feathers: but this is falſe; for that whitiſh ſubſtance that we ſee their greenith fæces covered with, and which turns afterwards chalky, is their urine. Let us next conſider the organs of generation of both ſexes, and firſt thoſe of the male.

277 The organs of generation in the male.

The *teſticles* are ſituated one on each ſide of the back-bone; and are proportionally very large to the creature's bulk. From theſe run out the *vaſa ſeminifera*; at firſt ſtraight; but after they recede farther from the body of the teſticle, they acquire an undulated or convoluted form, as the epididymis in man. Theſe convolutions partly ſupply the want of *veſiculæ ſeminales*, their coition being at the ſame time very ſhort: Theſe terminate in the penis, of which the cock has two, one on each ſide of the common cloaca, pointing directly outwards. They open at a diſtance from each other, and are very ſmall and ſhort; whence they have eſcaped the notice of anatomiſts, who have often denied their exiſtence. In birds there is no proſtate gland. This is what is chiefly remarkable in the organs of the male.

278 Vitellarium.

The *racemus viteſſorum*, being analogous to the ovaria in the human ſubject, is attached by a proper membrane to the back-bone. This is very fine and thin, and continued down to the uterus. Its orifice is averſe with reſpect to the ovaria; yet notwithſtanding, by the force of the *orgaſmus venereus*, it turns round and graſps the *vitellus*, which in its paſſage through this duct, called the *infundibulum*, receives a thick gelatinous liquor, ſecreted by certain glands. This, with what it receives in the uterus, compoſes the white of the egg. By this tube then it is carried into the uterus. The ſhell is lined with a membrane; and in the large end there is a bag full of air, from which there is no outlet.

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279 Uterus.

The *uterus* is a large bag, placed at the end of the *infundibulum*, full of wrinkles on its inſide; here the egg is completed, receiving its laſt involucrum, and is at laſt puſhed out at an opening on the ſide of the common cloaca. From the teſtes in the male being ſo very large in proportion to the body of the creature, there muſt neceſſarily be a great quantity of ſemen ſecreted; hence the animal is ſalacious, and becomes capable of impregnating many females. The want of the *veſiculæ ſeminales* is in ſome meaſure ſupplied by the convolutions of the *vaſa deferentia*, and by the ſmall diſtance betwixt the ſecerning and excretory organs. The two *penes* contribute alſo very much to their ſhort coition; at which time the opening of the uterus into the cloaca is very much dilated, that the effect of the ſemen on the vitelli may be the greater.

280 The want of the veſiculæ ſeminales, how ſupplied.

A hen will of herſelf indeed lay eggs; but theſe are not impregnated, and yet appear entirely complete, except that the ſmall black ſpot, which comes afterwards to be the rudiments of the chick, is not here to be obſerved.

TABLE of the Proportional Number of RIBS and VERTEBRÆ in various ſpecies of BIRDS.

SPECIES.	Verteb. of Neck.	Verteb. of Back.	Anter. falſe Ribs.	True Ribs.	Poſter. falſe Ribs.	N° of Ribs.	Sacral Verteb.	Coccyg. Verteb.
Vultur. Vulture,	13	7	-	-	-	-	11	7
Falco fulvus. Eagle,	13	8	□	7	0	7	17	8
—— *haliaëtus.* Bald buzzard,	14	8	0	7	1	8	11	7
—— *buteo.* Buzzard,	11	7	-	-	-	-	10	8
—— *niſus.* Sparrow hawk,	11	8	-	-	-	-	11	8
—— *milvus.* Kite,	12	8	-	-	-	-	11	8
Strix ulula. Owl,	11	8	-	7	-	-	11	8
Muſcicapa griſola. Fly-catcher,	10	8	-	-	-	-	10	8
Turdus merula. Blackbird,	11	8	-	-	-	-	10	7
Tanagra taldo. Tanagra,	10	8	-	-	-	-	9	8
Corvus corone. Crow,	13	8	1	5	1	7	13	7
—— *pica.* Magpie,	13	8	1	5	1	7	13	8
—— *glandarius.* Jay,	12	7	1	5	1	7	11	8
Sturnus vulgaris. Starling,	10	8	1	5	1	7	10	9
Loxia coccothrauſtes. Groſbeak,	10	7	-	-	-	-	12	7
—— *pyrrhula.* Bulfinch,	10	6	-	-	-	-	11	6
Fringilla domeſtica. Sparrow,	9	9	1	5	1	7	10	0
—— *carduelis.* Goldfinch,	11	8	1	5	1	7	11	8
Parus major. Titmouſe,	11	8	6	6	1	7	11	7
Alauda arvenſis. Lark,	11	9	1	5	1	7	10	7

TABLE,

TABLE, &c. continued.

Species.	Verteb of Neck.	Verteb. of Back.	Anter. falſe Ribs.	True Ribs.	Poſter. falſe Ribs.	N° of Ribs	Sacral Verteb.	Coccyg Verteb.
Motacilla rubecula. Redbreaſt,	10	8	-	-	-	-	10	8
Hirundo urbica. Swallow,	11	8	-	-	-	-	11	9
Caprimulgus europæus. Goatſucker,	11	8	-	-	-	-	11	8
Trochilus pelia. Topaz humming-bird,	12	9	-	-	-	-	9	8
Upupa epops. Hoopoe,	12	7	-	-	-	-	10	7
Alcedo iſpida. King's fiſher,	12	7	-	-	-	-	8	7
Picus viridis. Woodpecker,	12	8	1	6	1	8	10	9
Ramphaſtos. Toucan,	12	8	-	-	-	-	12	7+
Pſittacus erithacus. Parrot,	12	9	-	-	-	-	11	8
Columba œnas. Stockdove,	13	7	1	5	1	6	13	7
Pavo criſtatus. Peacock,	14	7	-	-	-	-	12	8
Phaſianus colchicus. Pheaſant,	13	7	2	8	1	11	15	5
Meleagris gallo-pavo. Turkey,	15	7	-	-	-	-	10	5
Crax nigra. Curaſſow bird. Hoceo,	15	8	2	4	1	7	10	7
Struthio camelus. Oſtrich,	18	8	-	-	-	-	20	9
——— *caſuarius.* Caſſawary,	15	11	-	-	-	-	19	7
Phœnicopterus. Flamingo,	18	7	-	-	-	-	12	7
Ardea cinerea. Heron,	18	7	1	7	-	8	10	7
——— *alba.* Stork,	19	7	-	-	-	-	11	8
——— *grus.* Crane,	19	9	1	7	1	9	12	7
Platalea äiäïa. Spoonbill,	17	7	-	-	-	-	14	8
Recurviroſtra. Avoſet,	14	9	-	-	-	-	10	8
Charadrius pluvialis. Plover,	15	8	1	6	1	8	10	7
Tringa vanellus. Lapwing,	14	8	-	-	-	-	10	7
Scolopax ruſticata. Woodcock,	18	7	-	-	-	-	13	8
——— *arquata.* Curlew,	13	8	-	-	-	-	10	8
Hæmatopus oſtralegus. Oyſter-catcher,	12	9	-	-	-	-	15	0
Rallus crex. Rail,	13	8	-	-	-	-	13	8
Fulica atra. Coot,	15	9	-	-	-	-	7	8
Parra. Jacana,	14	8	-	-	-	-	12	7
Pelicanus onocratalus. Pelican,	16	7	-	-	-	-	14	7
——— *carbo.* Cormorant,	16	9	-	-	-	-	14	8
Sterna hirundo. Sea ſwallow,	14	8	-	-	-	-	10	8
Procellaria. Petril,	14	8	-	-	-	-	??	8
Anas cygnus. Swan,	23	11	2	8	1	11	14	8
—— *anſer.* Gooſe,	15	10	-	-	-	-	14	7
—— *bernicla.* Bernacle,	18	10	-	-	-	-	14	9
—— *boſchas.* Duck,	14	8	-	7	1	8	15	8
—— *tadorna.* Sheldrake,	16	11	-	-	-	-	11	9
—— *nigra.* Black diver,	15	9	-	-	-	-	14	7
Mergus merganſer. Merganſer,	15	8	2	6	1	9	13	7
Colymbus criſtatus. Grebe,	14	10	-	-	-	-	13	7

CHAP. VI. ANATOMY OF REPTILES.

Sect. I. *Of Reptiles in general.*

These animals, like the fiſhes, have their blood nearly of the ſame temperature with the element in which they live. They have indeed a lung, and reſpire air, but their pulmonary veſſels are only branches of the large general artery and vein, and do not, as in the hot-blooded animals, form a peculiar ſyſtem equal to the vaſcular ſyſtem of the reſt of the body.

With reſpect to their organs of motion, reptiles may be divided into two orders. In the one, the ſerpents, the body is cylindrical and entirely without limbs, their motion is a kind of writhing or creeping.

The others have four feet very ſimilar in ſtructure to thoſe of the mammalia, whence theſe animals have been called *oviparous quadrupeds*. Such of them as live in the water have frequently membranes between their toes, which they employ like the fins of fiſhes for ſwimming. One ſpecies has a kind of membranaceous

Of Reptiles.

branaceous wings. We know two ſpecies which are called *bipedal reptiles*, which are only diſtinguiſhed from ſerpents, in having two very ſmall feet. In the whole claſs the feet are ſo ſhort, and ſo cloſe to the body, that they are not unaptly termed reptiles or creeping animals.

Their eyes are large and fiery, and are furniſhed with three lids. Their ear has neither concha nor external paſſage, and its tympanum lies flat to the head, and is often covered with ſcales or fleſh: internally it has only one little bone compoſed of a plate furniſhed with a ſort of handle. In ſome ſpecies the tympanum and its little bone are entirely wanting, as alſo the cochlea, but they have all ſemicircular canals, and a veſtibule. Their noſtrils are generally ſmall. In the ſerpents, whoſe tongue is almoſt horny, the ſenſe of taſte cannot be very exquiſite, but in the other ſpecies where the tongue is ſofter it may be pretty acute.

Their ſkin is naked or covered with ſcales. The tortoiſes are remarkable for being covered with a kind of buckler.

Some ſpecies of oviparous quadrupeds have ſix toes. Serpents exerciſe the ſenſe of touch by wrapping their body round the object which they deſire to feel.

The brain of reptiles is very ſmall, and divided into very diſtinct tubercles. Their ſenſation ſeems leſs to depend on a common centre than in the other animals which we have been conſidering, as they can live for a long time without the head, and after being deprived of the heart and all the viſcera; their limbs when ſeparated from the body preſerve their irritability for a conſiderable time; the heart of a frog will beat for many hours after it has been cut out. Reptiles have alſo a conſiderable power of reproduction. The tail of a lizard and ſeveral parts of water ſalamanders will grow again after being cut off. The jaws in theſe animals are for the moſt part armed with teeth which are conical and pointed, but ſome of them have only fleſhy or horny gums. Their alimentary canal is but ſmall, and has no cæcum, but it receives fluids ſimilar to thoſe of the hot-blooded animals. The urine, which is ſecreted by the kidneys, is received into a bladder, but is evacuated by the anus.

Their heart has only one ventricle, from which proceeds a ſingle artery divided into two large branches, which furniſh each a twig to the lung of that ſide, and are then united to be diſtributed to the other parts of the body. Hence theſe animals can at pleaſure ſuſpend reſpiration without ſtopping the circulation of the blood, ſo that they can remain a long time under water, or in a cloſe veſſel. The cells of the lungs are much larger than in the hot-blooded animals; and theſe organs reſemble oblong bags, which float in the ſame cavity with the other viſcera, without the interpoſition of a diaphragm. Some of theſe animals have the power of inflating their lungs to a great extent. They have a windpipe and a larynx, by which they can produce ſounds as in other animals which are provided with nerves.

The females of reptiles have a double receptacle for eggs furniſhed with two tubes, which open at the anus. In ſome ſpecies copulation takes place, and the eggs are covered with a ſhell more or leſs hard. In others the male merely ſprinkles with ſemen the eggs already laid, and theſe are merely covered with a membrane. Reptiles, no more than other animals with cold blood, have the power of hatching their eggs.

Of Reptiles.

Sect. II. *Tortoiſe.*

The covering of this animal is compoſed of a ſhell ſo remarkably hard and firm in its texture, that a loaded waggon may go over it without hurting the ſhell or the animal within it. In the young animal, this ſhell grows harder in proportion as its contents expand; and this creature never changes its ſhell as ſome others do: hence it was neceſſary for it to be made up of different pieces; and theſe are more or leſs diſtinct in different animals. Their feet are ſmall and weak; and they are exceedingly ſlow in motion. 281 Their ſhell or covering, &c.

It has neither tongue nor teeth; to make up for which, their lips are ſo hard as to be able to break almoſt the hardeſt bodies.

The alimentary canal very much reſembles that of the former claſs.

The principal difference is in the circulation of the blood. The heart has two diſtinct auricles, without any communication; and under theſe, there is the appearance of two ventricles ſimilar in ſhape to thoſe of the former claſs: but they may be conſidered as one cavity; for the ventricle ſends out not only the pulmonary artery, but likewiſe the aorta; for there is a paſſage in the ſeptum, by which the ventricles communicate freely, and the blood paſſes from the left into the right one. From the aorta, the blood returns into the right auricle, while that from the pulmonary artery returns to the left auricle, from which it is ſent to the left ventricle, &c. ſo that only a part of the blood is ſent to the lungs, the reſt going immediately into the aorta; hence the animal is not under the neceſſity of breathing ſo often as otherwiſe it would be.

From the baſe of the right ventricle goes out the pulmonary artery and aorta. The pulmonary artery is ſpent upon the lungs. The aorta may be ſaid to be three in number; for the aorta ſiniſtra aſcends through the pericardium in company with the pulmonary artery; and afterwards turns down, and ſends off a conſiderable branch, which ſplits into two; one of which joins the right aorta, while the other is diſtributed upon the liver, ſtomach, inteſtines, &c. What remains of this aorta runs to the kidneys or poſterior extremities of that ſide. An aorta deſcendens, &c. after piercing the pericardium, runs down and communicates with the branch already mentioned, is diſtributed upon the right kidney and inferior extremity, and alſo upon the bladder and parts of generation. An aorta aſcendens, after getting out of the pericardium, ſupplies the fore-legs, neck, and head. The blood in the ſuperior part of the body returns to the right auricle by two jugular veins, which unite after perforating the pericardium. From the inferior part, it returns to the ſame auricle by two large veins; one on the right ſide receives the blood in the right lobe of the liver; the other on the left ſide receives the blood in the left lobe, and alſo a trunk which 282 Blood-veſſels.

Of Fiſhes. correſponds with the inferior vena cava in other animals. The pulmonary veſſels run in the left auricle in the common way.

The abſorbent ſyſtem in the turtle, like that in the former claſs, conſiſts of lacteals and lymphatics, with their common trunks the thoracic ducts; but differs from it in having no obvious lymphatic glands on any part of its body, nor plexus formed at the termination in the red veins.

283 Lacteals. The *lacteals* accompany the blood-veſſels upon the meſentery, and form frequent net-works acroſs theſe veſſels: near the root of the meſentery a plexus is formed, which communicates with the lymphatics coming from the kidneys and parts near the anus. At the root of the meſentery on the left ſide of the ſpine, the lymphatics of the ſpleen join the lacteals; and immediately above this a plexus is formed, which lies upon the right aorta. From this plexus a large branch ariſes, which paſſes behind the right aorta to the left ſide, and gets before the left aorta, where it aſſiſts in forming a very large receptaculum, which lies upon that artery.

From this receptaculum ariſe the thoracic ducts. From its right ſide goes one trunk, which is joined by that large branch that came from the plexus to the left ſide of the right aorta, and then paſſes over the ſpine. This trunk is the thoracic duct of the right ſide; for, having got to the right ſide of the ſpine, it runs upwards on the inſide of the right aorta, towards the right ſubclavian vein; and when it has advanced a little above the lungs, it divides into branches, which near the ſame place are joined by a large branch that comes up on the outſide of the aorta. From this part upwards, thoſe veſſels divide and ſubdivide, and are afterwards joined by the lymphatics of the neck, which likewiſe form branches before they join thoſe from below. So that between the thoracic duct and the lymphatics of the ſame ſide of the neck, a very intricate net-work is formed; from which a branch goes into the angle between the jugular vein and the lower part or trunk of the ſubclavian. This branch lies therefore on the inſide of the jugular vein, whilſt another gets to the outſide of it, and ſeems to terminate in it, a little above the angle, between that vein and the ſubclavian. Of Fiſhes.

284 Lymphatics. Into the above-mentioned receptaculum, the lymphatics of the ſtomach and duodenum likewiſe enter. Thoſe of the duodenum run by the ſide of the pancreas, and probably receive its lymphatics and a part of thoſe of the liver. The lymphatics of the ſtomach and duodenum have very numerous anaſtomoſes, and form a beautiful net-work on the artery which they accompany. From this receptaculum likewiſe (beſides the trunk already mentioned, which goes to the right ſide) ariſe two other trunks pretty equal in ſize; one of which runs upon the left ſide, and the other upon the right ſide of the left aorta, till they come within two or three inches of the left ſubclavian vein; where they join behind the aorta, and form a number of branches which are afterwards joined by the lymphatics of the left ſide of the neck; ſo that here a plexus is formed as upon the right ſide. From this plexus a branch iſſues, which opens into the angle between the jugular and ſubclavian vein.

SECT. III. *Serpent and Crocodile.*

285 Circulation in ſerpents, &c. THE circulation in theſe is ſimilar to that of the turtle; but we find only one ventricle. The blood goes from the right auricle to the ventricle which ſends out the pulmonary artery and aorta; the blood from the pulmonary artery returns to the left auricle, that from the aorta going to the right auricle, and both the auricles opening into the ventricle.

SECT. IV. *Frog and Lizard.*

THESE differ from the former animals, in having only one auricle and a ventricle: and beſides, the ventricle ſends out a ſingle artery, which afterwards ſplits into two parts; one to ſupply the lungs, the other runs to all the reſt of the body: from the lungs and from the other parts, the blood returns into the auricle.

CHAP. VII. ANATOMY OF FISHES.

286 Cuticula, known to the human. OF theſe we may firſt obſerve, that they have a very ſtrong thick *cuticle*, covered with a great number of ſcales, laid one on another like the tiles of houſes. This among other arguments is ſuppoſed to prove the human epidermis to be of a ſquamous ſtructure: but the ſcales reſemble the hairs, wool, feathers, &c. of the creatures that live in air; and below theſe we obſerve their proper *cuticula* and *cutis*.

The generality of fiſhes, particularly thoſe ſhaped like the cod, haddock, &c. have a line running on each ſide. Theſe lines open externally by a number of ducts, which throw out a mucous or ſlimy ſubſtance that keeps them ſoft and clammy, and ſeems to ſerve the ſame purpoſe with the mucous glands or ducts which are placed within many of our internal organs.

In the next place, theſe creatures have neither abdominal nor lateral extremities, as quadrupeds and fowls; for their progreſſion is performed in a different way from either of thoſe ſpecies of animals: for this purpoſe they are provided with machines, properly conſiſting of a great number of elaſtic beams, connected to one another by firm membranes, and with a tail of the ſame texture; their ſpine is very moveable towards the poſterior part, and the ſtrongeſt muſcles of their bodies are inſerted there. Their tails are ſo framed as to contract to a narrow ſpace when drawn together to either ſide, and to expand again when drawn to a ſtraight line with their bodies; ſo, by the aſſiſtance of this broad tail, and the fins on their ſides, they make their progreſſion much in the ſame way as a boat with oars on its ſides and rudder at its ſtern. The perpendicular fins ſituated on the ſuperior part of their body keep them *in æquilibrio*, hindering the belly from turning uppermoſt; which it would readily do, becauſe of the air-bag

287 Swimming, how performed. Several uſes of their fins, tail, air-bags, &c.

Of Fiſhes. air-bag in the abdomen rendering their belly ſpecifically lighter than their back; but by the reſiſtance theſe fins meet with when inclined to either ſide, they are kept with their backs always uppermoſt.

It may be next obſerved, that theſe creatures have nothing that can be called a *neck*, ſeeing they ſeek their food in a horizontal way, and can move their bodies either upwards or downwards, as they have occaſion, by the contraction or dilatation of the air-bag; a long neck, as it would hinder their progreſſion, would be very diſadvantageous in the element they live in.

In the bony fiſhes the bodies of the vertebræ are ſometimes cylindrical, ſometimes angular, and frequently compreſſed: they are articulated only by their bodies, as there are no articulatory proceſſes. They may be divided into two claſſes; thoſe of the tail, which are furniſhed with a ſpinous proceſs both above and below; and thoſe of the belly or back, which have it only above. Theſe laſt are uſually furniſhed, at the ſides, with tranſverſe proceſſes for the attachment of the ribs. The ſpinous proceſſes, both dorſal and ſternal, are very long, eſpecially in the flat fiſh. At the baſe of the dorſal proceſſes there is a canal for lodging the ſpinal marrow, and the blood veſſels paſs through a ſimilar canal at the baſe of the ſternal proceſſes. There is nearly the ſame ſtructure in the cartilaginous fiſhes; but in theſe all the cartilages are ſo firmly fixed together, that only the ſpinous proceſſes can be diſtinguiſhed. The vertebra of a fiſh differs from that of other animals in the ſtructure of its body, at each extremity of which there is a conical cavity, ſo that between each pair of vertebræ there is a hollow ſpace formed by theſe two cones joined baſe to baſe, filled with a very ſoft cartilaginous or mucous ſubſtance on which the motions of the vertebræ are eaſily performed. The annexed table ſhows the proportional number of vertebræ in ſeveral ſpecies of fiſh.

Of Fiſhes.

TABLE of the Number of VERTEBRÆ in ſeveral ſpecies of FISHES.

SPECIES.	*Cervical Vertebræ.*	*Dorſal Vertebræ.*	*Lumbar Vertebræ.*	*Coccygian Vertebræ.*	*Total Number of Vertebræ.*
Raia batis. Ray,	Oſſified into one piece.	4	-	80+	-
Squalus. Shark,	-	-	-	-	207
Accipenſer ſturio. Sturgeon,	-	-	-	-	28
Syngnathus acus. Sea-needle,	-	-	-	-	50+
——— *hippocampus.* Sea-horſe	-	-	-	-	62
Baliſtes.	-	7	-	10	-
Oſtracion quadricornis.	-	-	-	-	13
Muræna anguilla. Eel,	-	-	-	-	115
Anarrhichas lupus. Sea-wolf,	2	24	-	50	-
Trachinus draco. Sea-dragon,	2	13	-	30	-
Uranoſcopus. Uranoſcope,	1	9	-	15	-
Gadus merlangus. Whiting,	2	17	4	32	55
Cottus ſcorpius. Sea-ſcorpion,	-	8	2	15	-
Trigla loricata. Armed trigla,	-	12	-	23	-
——— *cuculus.* Red gurnard,	-	13	-	21	-
——— *volitans.* Flying trigla,	3	8	-	12	-
Echineis remora. Remora.	-	12	-	15	-
Pleuronectes plateſſa. Plaice,	-	13	-	30	-
Gaſteroſteus pungitius. Stickle-back,	-	70	-	22	-
Perca fluviatilis. Perch,	-	21	-	20	-
Zeus faber. Doree,	4	9	2	16	31
—— *vomer.*	-	10	-	13	-
Chætodon cornu. Horned chætodon,	-	9	-	12	-
——— *tæra.* Striped chætodon,	-	9	-	12	-
Cyprinus carpio. Carp,	1	15	9	16	41
——— *naſus.*	1	19	5	19	44
Clupea harengus. Herring,	4	38	-	18	-
Salmo rhombus. Rhomboid ſalmon,	1	12	-	20	-
Eſox lucius. Pike,	4	35	-	20	-
—— *braſilienſis.* Braſilian pike,	-	34	3	15	-
Silurus felis. Sea-cat,	1	12	1	30	44
Loricaria. Armour fiſh,	1	6	1	28	36
Fiſtularia tabaccaria. Tobacco-pipe fiſh,	-	59	-	22	-

Of Fiſhes.

The *brain* in fiſhes is formed pretty much in the ſame way as that of fowls; only we may obſerve, that the poſterior lobes bear a greater proportion to the anterior.

288 Cerebrum.

289 Organ of ſmell.

Their organ of *ſmelling* is large; and they have a power of contracting and dilating the entry into their noſe as they have occaſion. It ſeems to be moſtly by their acute ſmell that they diſcover their food; for their tongue ſeems not to have been deſigned for a very nice ſenſation, being of a pretty firm cartilaginous ſubſtance; and common experience evinces, that their ſight is not of ſo much uſe to them as their ſmell in ſearching for their nouriſhment. If you throw a freſh worm into the water, a fiſh will diſtinguiſh it at a conſiderable diſtance; and that this is not done by the eye, is plain from obſerving, that after the ſame worm has been a conſiderable time in the water, and loſt its ſmell, no fiſhes will come near it; but if you take out the bait, and make ſeveral little inciſions into it, ſo as to let out more of the odoriferous effluvia, it will have the ſame effect as formerly. Now it is certain, that had the creatures diſcovered this bait with their eyes, they would have come equally to it in both caſes. In conſequence of their ſmell being the principal means which they have of diſcovering their food, we may frequently obſerve their allowing themſelves to be carried down with the ſtream, that they may aſcend again leiſurely againſt the current of the water; thus the odoriferous particles ſwimming in that medium, being applied more forcibly to their ſmelling organs, produce a ſtronger ſenſation.

290 Optic nerve.

The *optic nerves* in theſe animals are not confounded with one another in their middle progreſs betwixt their origin and the orbit, but the one paſſes over the other without any communication; ſo that the nerve that comes from the left ſide of the brain goes diſtinctly to the right eye, and *vice verſa*.

Indeed it would ſeem not to be neceſſary for the optic nerves of fiſhes to have the ſame kind of connection with each other as thoſe of man have: for their eyes are not placed in the fore part, but in the ſides of their heads; and of conſequence, they cannot ſo conveniently look at any object with both eyes at the ſame time.

291 The cryſtalline humour a complete ſphere, and why.

The *cryſtalline lens* is here a complete ſphere, and more denſe than in terreſtrial animals, that the rays of light coming from water might be ſufficiently refracted.

As fiſhes are continually expoſed to injuries in the uncertain element in which they live, and as they are in perpetual danger of becoming a prey to the larger ones, it was neceſſary that their eyes ſhould never be ſhut; and as the cornea is ſufficiently waſhed by the element they live in, they are not provided with palpebræ: but then, as in the current itſelf the eye muſt be expoſed to ſeveral injuries, there was a neceſſity it ſhould be ſufficiently defended; which in effect it is by a firm pellucid membrane, that ſeems to be a continuation of the cuticula, being ſtretched over here. The epidermis is ſo very proper for this purpoſe, as being inſenſible and deſtitute of veſſels, and conſequently not liable to obſtructions, or, by that means, of becoming opaque. In the eye of the ſkate tribe, there is a dipped curtain which hangs over the pupil, and may ſhut out the light when the animal reſts, and it is ſimilar to the tunica adnata of other animals.

Of Fiſhes.

292 Organs of hearing.

Although it was formerly much doubted whether fiſhes poſſeſſed a ſenſe of hearing, yet there can be little doubt of it now; ſince it is found that they have a complete organ of hearing as well as other animals, and likewiſe as the water in which they live is proved to be a good medium. Fiſhes, particularly thoſe of the ſkate kind, have a bag at ſome diſtance behind the eyes, which contains a fluid and a ſoft cretaceous ſubſtance, and ſupplies the place of veſtibule and cochlea. There is a nerve diſtributed upon it, ſimilar to the portio mollis in man. They have three ſemicircular canals, which are filled with a fluid, and communicate with the bag: they have likewiſe, as the preſent profeſſor of anatomy at Edinburgh has diſcovered, a meatus externus, which leads to the internal ear. The cod fiſh, and others of the ſame ſhape, have an organ of hearing ſomewhat ſimilar to the former; but inſtead of a ſoft ſubſtance contained in the bag, there is a hard cretaceous ſtone. In this kind of fiſh no meatus externus has been yet obſerved: And Dr Monro is inclined to think that they really have not one, from the conſideration that the common canal or veſtibule, where the three ſemicircular canals communicate, is ſeparated from the cavity of the cranium by a thin membrane only; that this cavity, in the greater number of fiſhes, contains a watery liquor in conſiderable quantity; and that, by the thinneſs of the cranium, the tremor excited by a ſonorous body may readily and eaſily be tranſmitted through the cranium to the water within it, and ſo to the ear.

The belly is covered on the inferior part with a black-coloured thin membrane reſembling our peritoneum. It is divided from the cheſt by a thin membranous partition, which has no muſcular appearance; ſo that we have now ſeen two different ſorts of animals that have no muſcular diaphragm.

293 Teeth, for what made.

Theſe creatures are not provided with *teeth* proper for breaking their aliment into ſmall morſels, as the food they uſe is generally ſmall fiſhes, or other animals that need no trituration in the mouth, but ſpontaneouſly and gradually diſſolve into a liquid chyle. Their teeth ſerve to graſp their prey, and hinder the creatures they have once catched from eſcaping again. For the ſame purpoſe, the internal cartilaginous baſis of the bronchi, and the two round bodies ſituated in the poſterior part of the jaws, have a great number of tenter-hooks fixed into them, in ſuch a manner as that any thing can eaſily get down, but is hindered from getting back. The water that is neceſſarily taken in along with their food in too great quantities to be received into their jaws in deglutition, paſſes betwixt the interſtices of the bronchi and the flap that covers them. The compreſſion of the water on the bronchi is of conſiderable uſe to the creature, as we ſhall explain by and by.

294 Digeſtion performed ſolely by a menſtruum

The *gullet* in theſe creatures is very ſhort, and ſcarcely diſtinguiſhed from their ſtomach, ſeeing their food lies almoſt equally in both. The ſtomach is of an oblong figure. There are commonly found ſmall fiſhes in the ſtomach of large ones ſtill retaining their natural form; but when touched, they melt down into

Of Fishes

into a jelly. From this, and the great quantity of liquors poured into their ſtomachs, we may conclude, that digeſtion is ſolely brought about in them by the diſſolving power of a menſtruum, and that no trituration happens here.

296 Inteſtina.

The *guts* in theſe animals are very ſhort, making only three turns; the laſt of which ends in the common cloaca for the feces, urine, and ſemen, ſituated about the middle of the inferior part of their bodies.

297 Pancreas.

To what we call *pancreas*, ſome give the name of *inteſtinula cæca*: it conſiſts of a very great number of ſmall threads, like ſo many little worms, which all terminate at laſt in two large canals that open into the firſt gut, and pour into it a viſcous liquor much about the place where the biliary ducts enter. That kind of pancreas formed of inteſtinula cæca is peculiar to a certain kind of fiſhes; for the cartilaginous, broad, and flat kind, as the ſkate, ſole, flounder, &c. have a pancreas reſembling that of the former claſs of animals. Their inteſtines are connected to the back bone by a membrane analogous to a meſentery.

298 Liver, gall-bladder, and their ducts.

The *liver* is very large, of a whitiſh colour, and lies almoſt in the left ſide wholly, and contains a great deal of fat or oil.

The *gall-bladder* is ſituated a conſiderable way from their liver; and ſends out a canal, the cyſtic duct, which joins with the hepatic duct juſt at the entry into the gut. Some fibres being obſerved ſtretched from the liver to the gall-bladder, but without any apparent cavity, the bile was ſuppoſed not to be carried into the gall-bladder in the uſual way, but that it muſt either be ſecerned on the ſides of the ſac, or regurgitate into it from the canalis choledochus. It it certain, however, that hepato-cyſtic ducts exiſt in fiſh as well as in fowls. This, for example, is very obvious in the ſalmon, where large and diſtinct ducts run from the biliary ducts of the liver, and open into the gall bladder.

299 Spleen, its uſe drawn from analogy.

The *ſpleen* is placed near the back-bone, and at a place where it is ſubjected to an alternate preſſure from the conſtriction and dilatation of the air-bag, which is ſituated in the neighbourhood. Since, in all the different animals we have diſſected, we find the ſpleen attached to ſomewhat that may give it a conquaſſation; as in the human ſubject and quadrupeds, it is contiguous to the diaphragm; in fowls, it is placed betwixt the back-bone, the liver, and ſtomach; in fiſhes, it lies on the ſaccus aerius; and ſince we find it ſo well ſerved with blood-veſſels, and all its blood returning into the liver, we muſt not conclude the ſpleen to be an *inutile pondus*, only to ſerve as a balance to the animal *pro æquilibrio*, but particularly deſigned for preparing the blood to the liver.

300 The heart has but one auricle and and ventricle.

The *heart* is of a triangular form, with its baſe downwards, and apex uppermoſt; which ſituation it has becauſe of the *branchiæ*. It has but one *auricle* and one *ventricle*, becauſe they want lungs; and one great artery. The ſize of the auricle and that of the ventricle are much the ſame; the artery ſends out numberleſs branches to the branchiæ or gills. And what is rather curious, this artery, inſtead of ſupporting all parts as in the frog, is diſtributed entirely upon the gills; every branch terminating there, and becoming ſo extremely ſmall as at laſt to eſcape the naked eye.

Theſe creatures have a *membranous diaphragm*, which forms a ſac in which the heart is contained. It is very tenſe, and almoſt perpendicular to the vertebræ.

Of Fishes. Diaphragm.

The *branchiæ* lie in two large flats at each ſide of their heads, and ſeem to be all they have that bears any analogy to lungs. Their form is ſemicircular; they have a vaſt number of red fibrillæ ſtanding out on each ſide of them like a fringe, and very much reſemble the vane of a feather. Theſe branchiæ are perpetually ſubjected to an alternate motion and preſſure from the water; and we may here remark, that we have not found any red blood but in places ſubjected to this alternate preſſure. This obſervation will help us in explaining the action of the lungs upon the blood. Over theſe gills there is a large flap, allowing a communication externally; by which the water they are obliged to take into their mouths with their food finds an exit without paſſing into their ſtomach; it is owing to theſe flaps coming ſo far down that the heart is ſaid commonly to be ſituated in their heads. The blood is collected again from the gills by a vaſt number of ſmall veins, ſomewhat in the ſame manner as our pulmonary vein; but inſtead of going back to the heart a ſecond time, they immediately unite, and form an aorta deſcendens, without the intervention of an auricle and ventricle. Hence a young anatomiſt may be puzzled to find out the power by which the blood is propelled from the gills to the different parts of the body; but the difficulty will be conſiderably leſſened when we conſider the manner in which the blood is carried through the liver from the inteſtines in man and quadrupeds. The aorta in fiſhes ſends off branches which ſupply all the parts of the body excepting the gills. From the extremity of thoſe branches the blood returns to the heart ſomewhat in the ſame manner as in the former claſs of animals; only there are two inferior venæ cavæ, whereas the former has but one.

Abſorbent Syſtem in Fiſhes. We ſhall take the haddock as a general example; for the other fiſhes, particularly thoſe of the ſame ſhape, will be found in general to agree with it.

303 Lymphatic veſſels.

On the middle of the belly of a haddock, immediately below the outer ſkin, a lymphatic veſſel runs upwards from the anus, and receives branches from the parietes of the belly, and from the fin below the anus; near the head this lymphatic paſſes between the two pectoral fins; and having got above them, it receives their lymphatics. It then goes under the ſymphyſis of the two bones which form the thorax, where it opens into a net-work of very large lymphatics, which lie cloſe to the pericardium, and almoſt entirely ſurrounds the heart. This net-work, beſides that part of it behind the heart, has a large lymphatic on each ſide, which receives lymphatics from the kidney, runs upon the bone of the thorax backwards; and when it has got as far as the middle of that bone, it ſends off a large branch from its inſide to join the thoracic duct. After detaching this branch, it is joined by the lymphatics of the thoracic fins, and ſoon after by a lymphatic which runs upon the ſide of the fiſh. It is formed of branches, which give it a beautiful penniform appearance.

Beſides theſe branches, there is another ſet deeper

wheſe

Of Fishes. which accompanies the ribs. After the large lymphatic has been joined by the above-mentioned veſſels, it receives lymphatics from the gills, orbit, noſe, and mouth. A little below the orbit, another net-work appears, conſiſting in part of the veſſels above deſcribed, and of the thoracic duct. This net-work is very complete, ſome of its veſſels lie on each ſide of the muſcles of the gills; and from its internal part a trunk is ſent out, which terminates in the jugular vein.

304 The lacteals.

The lacteals run on each ſide of the meſenteric arteries, anaſtomoſing frequently acroſs theſe veſſels. The receptaculum into which they enter is very large, in proportion to them; and conſiſts at its lower part of two branches, of which one lies between the duodenum and ſtomach, and runs a little way upon the pancreas, receiving the lymphatics of the liver, pancreas, thoſe of the lower part of the ſtomach, and the lacteals from the greateſt part of the ſmall inteſtines. The other branch of the receptaculum receives the lymphatics from the reſt of the alimentary canal. The receptaculum formed by theſe two branches lies on the right ſide of the upper part of the ſtomach, and is joined by ſome lymphatics in that part, and alſo by ſome from the ſound and gall-bladder, which in this fiſh adheres to the receptaculum. This thoracic duct takes its riſe from the receptaculum, and lies on the right ſide of the œſophagus, receiving lymphatics from that part; and running up about half an inch, it divides into two ducts, one of which paſſes over the œſophagus to the left ſide, and the other goes ſtraight upon the right ſide, paſſes by the upper part of the kidney, from which it receives ſome ſmall branches, and ſoon afterwards is joined by a branch from the large lymphatic that lies above the bone of the thorax, as formerly mentioned: near this part it likewiſe ſends off a branch to join the duct of the oppoſite ſide; and then, a little higher, is joined by thoſe large lymphatics from the upper part of the gills, and from the fauces.

The thoracic duct, after being joined by theſe veſſels, communicates with the net-work near the orbit, where its lymph is mixed with that of the lymphatics from the poſterior part of the gills, and from the ſuperior fins, belly, &c. and then from this net-work a veſſel goes into the jugular vein juſt below the orbit. This laſt veſſel, which may be called the termination of the whole ſyſtem, is very ſmall in proportion to the net-work from which it riſes; and indeed the lymphatics of the part are ſo large, as to exceed by far the ſize of the ſanguiferous veſſels.

The thoracic duct from the left ſide, having paſſed under the gullet from the right, runs on the inſide of the vena cava of the left ſide, receives a branch from its fellow of the oppoſite ſide, and joins the large lymphatics which lie on the left ſide of the pericardium, and a part of thoſe which lie behind the heart; and afterwards makes, together with the lymphatics from the gills, upper fins, and ſide of the fiſh, a net-work, from which a veſſel paſſes into the jugular vein of this ſide. In a word, the lymphatics of the left ſide agree exactly with thoſe of the right ſide above deſcribed. Another part of the ſyſtem is deeper ſeated, lying between the roots of the ſpinal proceſſes of the back-bone. This part conſiſts of a large trunk that begins from the lower part of the fiſh, and as it aſcends r...

ceives branches from the dorſal fins and adjacent parts of the body. It goes up near the head, and ſends a branch to each thoracic duct near its origin. Of Fishes.

305 Organs of generation.

The only *organs of generation* in this animal are two bags ſituated in the abdomen uniting near the podex. Theſe in the male are filled with a whitiſh firm ſubſtance called the *milt*, and in the female with an infinite number of little ova cluſtered together, of a reddiſh yellow colour, called the *roe*. Both theſe at ſpawning time we find very much diſtended; whereas at another time the male organs can ſcarce be diſtinguiſhed from the female; nor is there any proper inſtrument in the male for throwing the ſeed into the organs of the female, as in other creatures. We ſhall not take upon us to determine the way whereby the female ſperm is impregnated: but we find that the ſpawn of frogs conſiſts in the ſmall ſpecks wrapped up in a whitiſh glutinous liquor: theſe ſpecks are the rudiments of the young frogs, which are nouriſhed in that liquor till they are able to go in ſearch of their food. In the ſame way, the ova of fiſhes are thrown out and depoſited in the ſand, the male being for the moſt part ready to impregnate them, and they are incubated by the heat of the ſun. It is curious enough to remark with what care they ſeek for a proper place to depoſite their ova, by ſwimming to the ſhallow, where they can better enjoy the ſun's rays, and ſhun the large jaws of other fiſhes. The river-fiſhes, again ſpawn in ſome creek free from the hazard of the impetuous ſtream. But whether this mixture be brought about in fiſhes by a ſimple application of the genitals to each other, or if both of them throw out their liquors at the ſame time in one place, and thus bring about the deſired mixture, it is not eaſy to determine. Spallanzani has found, that the eggs of frogs, toads, and water newts, are not fecundated in the body of the female; that the male emits his ſemen upon the ſpawn while it is flowing from the female; and that the fœtus pre-exiſts in the body of the female: but whether impregnation takes place in the ſame manner in fiſhes, he has not yet been able to determine, though he ſeems to think it probable. Theſe creatures are ſo ſhy, that we cannot eaſily get to obſerve their way of copulation, and are conſequently but little acquainted with their natural hiſtory. Frogs, it is very evident, do not copulate: at leaſt no farther than to allow both ſexes an opportunity of throwing their ſperm. Early in the ſpring the male is found for ſeveral days in cloſe contact upon the back of the female, with his fore legs round her body in ſuch a manner that makes it very difficult to ſeparate them, but there is no communication. At this time the female lays her ſpawn in ſome place that is moſt ſecure, while the male emits his ſperm upon the female ſpawn.

306 The air-bladder, and its uſes.

After raiſing up the black peritoneum in fiſhes, there comes in view an oblong white membranous bag, in which there is nothing contained but a quantity of elaſtic air. This is the *ſwimming-bladder*: it lies cloſe to the back-bone; and has a pretty ſtrong muſcular coat, whereby it can contract itſelf. By contracting this bag, and condenſing the air within it, they can make their bodies ſpecifically heavier than water, and ſo readily fall to the bottom; whereas the muſcular fibres ceaſing to act, the air is again dilated, and they become ſpecifically lighter than water, and ſo ſwim above.

Of Mollusca.

above. According to the different degrees of contraction and dilatation of this bladder, they can keep higher or lower in the water at pleasure. Hence flounders, soles, raia or skate, and such other fishes as want this sac, are found always grovelling at the bottom of the water: it is owing to this that dead fishes (unless the membrane has been previously broke) are found swimming a-top, the muscular fibres then ceasing to act, and that with their bellies uppermost; for the backbone cannot yield, and the distended sac is protruded into the abdomen, and the back is consequently heaviest at its upper part, according to their posture. There is here placed a glandular substance, containing a good quantity of red blood; and it is very probable that the air contained in the swimming-bladder is derived from this substance. From the anterior part of the bag go out two *processes* or *appendices*, which, according to the gentlemen of the French academy, terminate in their fauces: in a variety of other fishes we find communications with some part of the alimentary canal, particularly the œsophagus and stomach. The salmon has an opening from the fore end of the air-bag into the œsophagus, which is furnished by a kind of muscular fibres. The herring has a tunnel-like passage leading from the bottom of the stomach into the air-bag; but it is not determined whether the air enters the air-bag by this opening, or comes out by it: the latter, however, seems to be the more probable opinion, as the glandular body is found in all fishes, whereas there are several without this passage of communication.

307 Its processes, or communication with the ventriculus.

At the superior part of this bag there are other red-coloured bodies of a glandular nature, which are connected with the kidneys. From them the *ureters* go down to their insertion in the *vesica urinaria*, which lies in the lower part of the abdomen; and the urethra is then produced, which terminates in the podex.

Ureters.

Urethra.

CHAP. VIII. OF MOLLUSCA.

IN these animals the muscles or fleshy fibres are white, and possessed of great irritability: they retain the power of motion even after being cut into small pieces; and many parts of their bodies are capable of being reproduced after being separated. Their external surface is always moist, as there commonly exudes from it a viscous fluid. It is extremely sensible, and is furnished with organs called *tentacula*, which are capable of being lengthened out or contracted, so as to enable the animal to feel the better. It is uncertain whether or not these animals possess the sensation of smell, but if they do, the organ of this sense is probably situated at the entrance of their pulmonary vessels. Many of them have eyes, and some appear to be possessed of ears.

Their body is usually provided with, or at least partly enveloped by, a membranaceous covering. In many this covering is more or less cruitaceous, produced from a calcareous juice exuding from the surface of the animal, and forming a shell composed of one or more pieces or valves. The body of the animal is attached to this shell by muscles, which enable it to retire within the valves, or to shut these together. These muscles change their place, separating from one part, and growing to another, so as always to preserve the same relative position, notwithstanding the unequal growth of the shell. Most of these animals are inhabitants of the sea: some of them reside in fresh water; and some of them reside entirely on land.

The mollusca may be divided into three orders.

1. The *cephalopoda*, so called because their feet, or at least the organs with which they seize their prey, are situated in the head. Their body is in the form of a sack, which, when the external covering is removed, exhibits the appearance of a compact network of fleshy fibres in three distinct layers. Of these the outermost are placed lengthwise, the middle in a cross direction, and the innermost in no regular order. By the various actions of these fibres the sack of the animal is lengthened, contracted, bent, or twisted in various directions.

These animals are furnished below the skin of the back with a solid body, which is for the most part exceedingly elastic and transparent, and is sometimes furrowed longitudinally. In all the species of sepia or cuttle-fish, except the *S. octopus*, which wants it, this body is a sort of bone, formed of thin concentric plates, separated by small columns, arranged so as to form a quincunx. It is oval and lenticular, or thickest in the middle.

The feet in this order are eight in number, and form a circle round the mouth; they end in suckers, by which the animal fixes itself to any substance, and are furnished with numerous muscles, by which they are moved in every direction. The other species of sepia (except the *octopus* and the calmar), have, besides these eight feet, two others which are longer and smaller.

They have three hearts; their respiration is carried on in the water by means of branchiæ; they have very large eyes, and organs of hearing situated within the head; their stomach is very fleshy, so as to resemble the gizzard of a fowl, and they have a very large liver. They are also furnished with a peculiar gland for the purpose of secreting an inky fluid, which, when they wish to conceal themselves, they throw out, and thus obscure the water round them.

2. The *gasteropoda*, which have upon the belly a muscular plane, by the contraction of which they creep upon the belly, as may be observed in the snail; and hence their name. They have no heart; their branchiæ are situated sometimes within the body, sometimes they surround the body, and are often on the back; they are naked in the first case, and in the others are covered with a kind of lid, and are of various forms. The common trunk of the blood-vessels is subdivided for the purpose of distributing to the branchiæ the blood which has circulated through the body. The most of this order are hermaphrodite, but require reciprocal copulation. There is almost always situated near the matrix a bag, containing a fluid,

Of Cruſtacea, &c.

which is generally thought to be the ſubſtance employed by the ancients in the dyeing of purple; the uſe of this fluid in theſe animals is unknown. The inteſtines conſiſt of a ſtomach more or leſs fleſhy, and an alimentary canal; they have a very large liver, and a conſiderable number of them are provided with brain and nerves.

3. The *acephala*, ſo called becauſe they have no heads. Theſe animals are commonly contained within two ſhells, and have their body entirely enveloped in a membranaceous covering, which opens either in one part or two; and to this covering, eſpecially at that part where the water enters, are attached the tentacula, the only external organ of ſenſation which the animals of this order appear to poſſeſs. Their organs of reſpiration are compoſed of large vaſcular laminæ, ſituated at the two ſides, immediately beneath the covering; their heart is placed towards the back. The ſtomach and great part of the inteſtinal canal paſſes through the liver. Their mouth, which opens immediately into the ſtomach, is placed between the branchiæ, at the orifice oppoſite to that by which the water enters, and round it are placed four triangular bodies which appear to be tentacula. The brain, where it is preſent, is placed between the branchiæ and the inteſtinal canal. They appear to be all hermaphrodites, and do not require copulation.

Of Cruſtacea, &c.

CHAP. IX. OF THE CRUSTACEA.

THE animals which compoſe this order have commonly been ranked among the inſects; but we have thought it better to ſeparate them, as they are poſſeſſed of character by which they are ſufficiently diſtinguiſhed. They have the body enveloped in a ſort of armour compoſed of ſeveral pieces or ſcales, and are uſually provided with a great number of jointed limbs.

The head in theſe animals is immoveable, their principal motions being confined to the tail and feet. The tail forms a conſiderable portion of the animal, and is furniſhed with very large and ſtrong muſcles by the action of which the animal is enabled to leap and ſwim with great celerity.

Their feet are of different forms in the ſeveral ſpecies, and alſo vary in number, and in ſome ſpecies anſwer ſeveral very different purpoſes. What in theſe animals is analogous to the brain, is a long knotted nervous cord, from the knots of which the nerves are diſtributed to the body. Their eyes are hard and complex, and are uſually placed on a ſort of footſtalks, which enable them to move with great facility in all directions. They are furniſhed with feelers and antennæ as we ſhall ſee in inſects. Their organs of hearing are very imperfect. They have a heart, and both an arterial and a venous ſyſtem of blood veſſels. They breathe by means of branchiæ. Their jaws are generally numerous, very ſtrong, and ſituated in a tranſverſe direction. They are of diſtinct ſexes, and the male has two penes.

CHAP. X. OF INSECTS.

AS under ENTOMOLOGY, now become a ſtudy ſo faſhionable, and which has been carried to a high degree of perfection, we propoſe to give a particular account of the ſtructure and economy of inſects, we ſhall at preſent only offer a ſhort ſketch of their anatomy.

Inſects differ from the former claſſes, by their bodies being covered with a hard cruſt or ſcale, by their having feelers or antennæ ariſing from their head, and many of them breathing the air through lateral pores. As to the ſhape of their bodies, though it ſomewhat differs from that of birds, being in general not ſo ſharp before to cut and make way through the air, yet it is well adapted to their manner of life. The baſe of their bodies is not formed of bone, as in many other animals, but the hard external covering ſerves them for ſkin and bone at the ſame time. Their feelers, beſide the uſe of cleaning their eyes, are a guard to them in their walk or flight. Their legs and wings are well fitted for their intended ſervice; but the latter vary ſo much in different inſects, that from them naturaliſts have given names to the ſeveral orders of the claſs. As, firſt, the

Coleoptera, or beetle tribe, which have a cruſtaceous elytra or ſhell, that ſhuts together, and forms a longitudinal ſuture down their back.

Hæmiptera—as in cimex, cockroach, bug, &c. which have the upper wings half cruſtaceous and half membranaceous; not divided by a longitudinal ſuture, but incumbent on each other.

Lepidoptera—as the butterfly, have four wings, covered with fine ſcales in the form of powder.

Neuroptera—as the dragon-fly, ſpring-fly, &c. have four membranaceous tranſparent naked wings, generally reticulated.

Hymenoptera—as waſps, bees, &c. have four membranaceous wings, and a tail furniſhed with a ſting.

Diptera—as the common houſe-fly, have only two wings.

Aptera—as the ſcorpion, ſpider, &c. have no wings.

The ſtructure of the eye in many inſects is a moſt curious piece of mechaniſm. The outer part is remarkably hard, to guard againſt injuries; and has commonly a reticular appearance, or the whole may be looked upon as an aſſemblage of ſmaller eyes; but whether they ſee objects multiplied before them, has not yet been determined.

Of Worms, &c.

Linnæus, and ſeveral others following him, deny the exiſtence of a brain in theſe creatures.

Their ear has been lately diſcovered to be placed at the root of their antennæ or feelers, and can be diſtinctly ſeen in ſome of the larger kinds.

They have a ſtomach, and other organs of digeſtion.

They have a heart and blood veſſels, and circulation is carried on in them ſomewhat as in the former claſs; but the blood is without red globules; or, as naturaliſts ſpeak, is colourleſs. In ſome of the larger kind, when a piece of the ſhell is broken, the pulſation of the heart is ſeen diſtinctly, and that ſometimes for ſeveral hours after it has been laid bare.

Lungs. The exiſtence of theſe by ſome has been denied. But late experiments and obſervations ſhow that no ſpecies want them, or at leaſt ſomething ſimilar to them; and in many inſects, they are larger in proportion than in other animals; in moſt of them they lie on or near the ſurface of their body; and ſend out lateral pores or tracheæ, by which, if the animal is beſmeared with oil, it is inſtantly ſuffocated.

Generation. The ſame difference in ſex exiſts in inſects as in other animals, and they even appear more diſpoſed to increaſe their ſpecies; many of them, when become perfect, ſeeming to be created for no other purpoſe but to propagate their like. Thus the ſilkworm, when it arrives at its perfect or moth ſtate, is incapable of eating, and can hardly fly; it endeavours only to propagate its ſpecies: after which the male immediately dies, and ſo does the female as ſoon as ſhe has depoſited her eggs.

Beſides thoſe of the male and female, a third ſex exiſts in ſome inſects, which we call *neuter*. As theſe have not the diſtinguiſhing parts of either ſex, they may be conſidered as eunuchs or infertile. We know of no inſtance of this kind in any other claſs of animals; and it is only found among thoſe inſects which form themſelves into ſocieties, as bees, waſps, and ants: and here theſe eunuchs are real ſlaves, as on them lies the whole buſineſs of the economy. No hermaphrodites have as yet been diſcovered among inſects.

Many have imagined that the generality of inſects were merely the production of putrefaction, becauſe they have been obſerved to ariſe from putrified ſubſtances; but a contrary opinion is now more generally adopted; and it is pretty certain, that if putrid bodies be ſhut up in a cloſe veſſel, no inſects are ever generated unleſs their ova have been originally depoſited there. They are oviparous animals, and lay their eggs in places moſt convenient for the nouriſhment of their young; ſome in water, others in fleſh; ſome in fruit and leaves; while others make neſts in the earth or in wood, and ſometimes even in the hardeſt ſtone. The eggs of all inſects firſt become (*larva*) caterpillar, or maggot; from which they are changed into (*pupa*) chryſalis or aurelia, ſo named from their being incloſed in a caſe; and theſe dying, or ſeeming to die, the (*imago*) fly, or butterfly, or perfect ſtate, ſucceeds; and during each of theſe changes their appearance differs wonderfully.

CHAP. XI. OF WORMS.

THE worms form a claſs in the ſyſtem of Linnè, comprehending the molluſca, and the next aſſemblage of which we are to ſpeak, viz. the *Zoophytes*, beſides the worms properly ſo called.

We have ſeen that inſects in one part of their exiſtence appear in the ſtate of larvæ, or organized beings reſembling the common caterpillar or larvæ of the butterfly. In ſome of theſe the organs of motion are very perfect, and they are furniſhed with regular articulated members, provided with ſolid parts. From theſe there is a gradation to the worms, which have no feet, but move forwards either by means of briſtles or hairs fixed in the ſurface of their bodies, as in the common earth-worm and the lumbricus of the inteſtines, or they are provided at each extremity with a circular ſucker, as in the leech, by which they faſten one end of their body to the ſurface on which they are to move, and proceed forward by the contractions of the muſcular rings of which their body is chiefly compoſed. Within their body is found a white nervous cord. Thoſe which inhabit the water carry on reſpiration by means of membranaceous branchiæ; in others there are pores or ſtigmata, analogous to the tracheæ of inſects; ſome of them are furniſhed with feelers. Of the moſt important of this claſs, the worms which inhabit the inteſtines of other animals, we propoſe to give a particular account in a future article.

CHAP. XII. OF THE ZOOPHYTES.

THE zoophytes form the loweſt claſs of animated nature; and many of them bear ſo cloſe a reſemblance to plants and minerals, that they would ſeem to belong rather to theſe kingdoms than to that in which modern naturaliſts have agreed to arrange them. The molluſca poſſeſs organs of digeſtion, ſenſation, circulation, and reſpiration, and are furniſhed with viſcera not very unlike thoſe of the vertebral animals. Inſects form the next degree, which have no diſtinct circulation, and very imperfect reſpiratory organs; but in them we ſee ſomething like a brain, and well-marked organs of ſenſation. We obſerve the ſame in many worms, in moſt of which they probably exiſt. But in the zoophytes there is no appearance of circulation; there are no nerves, and no ſenſorium or common centre of ſenſation; there is but little appearance

Of Zoophytes.

of reſpiration, and often ſcarcely any thing which may be termed an organ of digeſtion. Every point of their body ſeems independently to attract nourithment, and independently to poſſeſs the faculty of ſenſation; hence the extreme degree of irritability, the great power of vitality and of reproduction, which we find in theſe animals. For propagation, they need only be cut in pieces, and do not require a difference of ſex or organs of generation to preſerve the ſpecies: They may be divided into two orders; the firſt of which, as bearing a reſemblance to both animals and plants, may be properly cal'ed *zoophytes*; and the laſt, as reſembling both plants and ſtones, may be called *lithophytes*. See LITHOPHYTES and ZOOPHYTES. We have in this comparative view of organized beings, purpoſely avoided giving any deſcription of the anatomy of plants. This would form a neceſſary part of a complete ſyſtem of comparative anatomy; but does not properly fall to be conſidered in a ſketch of this kind. It will be fully detailed in its proper place. See BOTANY.

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Anattom, Anaxagoras.

ANATTOM, in *Geography*, the moſt ſouthern iſland of the New Hebrides, in the ſouthern Pacific ocean. S. Lat. 20. 3. E. Long. 170. 4.

ANAXAGORAS, an eminent philoſopher of antiquity, was born in the firſt year of the 70th Olympiad, or 500 years before Chriſt. In conſequence of the eminent talents of this philoſopher he obtained the appellation of *Mind*. Pythagoras repreſents philoſophers as mere ſpectators of the affairs of human life, and who, neglecting all other purſuits, devote their exertions to the inveſtigation of nature, and the ſearch after wiſdom. According to this definition of a philoſopher, Anaxagoras ſtrictly merited the honourable appellation; for though he was of a reſpectable deſcent, and poſſeſſed of a conſiderable fortune, yet he relinquiſhed both, ſo that, in the language of Cicero, he might "give himſelf wholly to the divine pleaſures of learning and inquiry." The ſons of wealth, and the lovers of money, will probably unite in the ridicule caſt upon him by the age in which he lived, even "that he philoſophized very fooliſhly;" but the mind of Anaxagoras diſregarded their ſcorn, and perſevered in his plan; and although the reader may heſitate in giving applauſe to the man who deprives ſociety of the benefits of his ſocial talent, yet the eager thirſt of his mind after knowledge is entitled to becoming credit.

Leaving his lands to be cultivated and enjoyed by his friends, Anaxagoras placed himſelf under the care of Anaximenes the Mileſian. About the age of twenty he went to Athens and entered upon the ſtudy of philoſophy, where he continued 30 years. Some ſuppoſe that he was the firſt diſciple of the Ionian ſchool, founded by Thales a teacher of philoſophy in Athens. When Anaxagoras aſſumed the character of a public teacher of philoſophy, he quickly roſe to high eminence, and produced many famous ſcholars, among whom were Euripides the tragedian, Pericles the ſtateſman, and the renowned Socrates. This philoſopher contented himſelf with ſerving the republic in his own ſtation, without interfering in any of the public affairs of the ſtate. Both by the principles of wiſdom which he inſpired into the minds of the Athenian youth, and alſo by his daily advice in the moſt important affairs, particularly in the caſe of Pericles, he was of ſingular ſervice to his country. But neither the friendſhip of the famous Pericles, nor his own general diſintereſtedneſs of character, nor his immenſe ſtores of learning, could ward off the ſhafts of perſecution. Cleo accuſed him of impiety, and the introduction of new opinions concerning the gods, becauſe he taught that the ſun was a burning maſs of ſtone, or an inanimate fiery ſubſtance. By this opinion he was ſaid to rob the ſun of his divinity, becauſe in the popular opinion he was deemed Apollo, one of the greateſt deities. But although Cleo made religion the avowed cauſe of the accuſation of Anaxagoras, it is highly probable that civil cauſes chiefly operated towards his condemnation. It is, however, abundantly evident, that he did not heſitate to expoſe the vulgar ſuperſtitions on ſeveral occaſions; but the evidence is not ſufficient which pretends to prove that he was condemned for teaching the doctrine of a ſupreme intelligence, the creator of this world. His judges condemned him to death; but Pericles appearing in his defence, the ſentence was changed from that of death to baniſhment and a pecuniary fine. Anaxagoras.

It is reported, that when one of his friends regretted his exile, he replied: "It is not I who have loſt the Athenians, but the Athenians who have loſt me." Whilſt a ſmall degree of vanity appears in this ſentiment, it nevertheleſs informs poſterity with what calmneſs of mind he endured the changes of fortune. But other ſayings tend more fully to unfold his character. During the courſe of a lecture one day, he was interrupted with the unpleaſant news of the death of a ſon; he calmly replied, "I knew that I begat him mortal." When he received the ſentence of condemnation, he conſoled himſelf by this conſideration: "Nature,

Anaxagoras. ture, (ſaid he) long ago pronounced the ſame ſentence againſt me."

Expelled from Athens, Anaxagoras paſſed the remainder of his days at Lampſacus, teaching philoſophy in the ſchool of his deceaſed maſter Anaximenes, until the infirmities of nature terminated his uſeful life in the year 428 before Chriſt. Before his death his friends inquired if they ſhould carry his bones to his native city: he returned for anſwer, that this was quite "unneceſſary, the way to the regions below is everywhere alike open." When the magiſtrates of Lampſacus ſent a meſſage to him before his death, requeſting to know in what manner he wiſhed them to honour his memory, he ſaid, "Only let the day of my death be annually kept as a holiday by the boys in the ſchools of Lampſacus." This was complied with, and the cuſtom remained even in the time of Diogenes Laërtius. This great philoſopher died at the advanced age of 72, and the inhabitants of Lampſacus erected a tomb over his remains, with the following epitaph.

Ενθαδε, πλειστον αληθειας επι τειμα πεφησας
Ουρανιω κοσμω, κειται Αναξαγορας.

This tomb great Anaxagoras confines,
Whoſe mind explor'd the paths of heavenly truth.

It is alſo reported, that there was an altar erected to his memory, upon which were inſcribed the words *Truth* and *Mind*.

Many fabulous reports are narrated concerning this philoſopher, of which it appears unneceſſary to take any particular notice; and Diogenes Laërtius has collected with little care and judgment, after an interval of more than 700 years, the remains concerning this philoſopher, which were ſcattered through various writings. With no ſmall degree of diffidence then the pen muſt record a ſummary of his doctrine collected from ſuch unſatisfactory information; eſpecially ſince his biographer himſelf has given full proof both of his ignorance and negligence, and as the whole narrative abounds with chronological contradictions and other inconſiſtencies.

It appears, however, that in the midſt of ſome extravagant conceptions Anaxagoras held opinions which indicate a conſiderable acquaintance with the laws of nature. His idea of the heavens appears to have been, that they were a ſolid vault, originally compoſed of ſtones, elevated from the earth by the violent motion of the ambient æther, inflamed by its heat, and by the rapid circular motion of the heavens fixed in their reſpective places. The teſtimonies of ſeveral writers, among which is that of the reſpectable Xenophon, unite in proving that he conſidered the ſun to be a large fiery ſtone; and Xenophon introduces Socrates as refuting that doctrine, and delivering an unfavourable opinion concerning his other writings. From his perceiving that the rainbow is the effect of the reflection of the ſolar rays from a dark cloud, and that wind is produced by the rarefaction, and ſound by the percuſſion, of the air, Anaxagoras ſeems to have paid conſiderable attention to the phenomena of nature. He muſt have had ſome knowledge of the nature of the atmoſphere, and the doctrine of eclipſes, if, according to report, he could predict a fall of rain and darkneſs at noonday.

Our information is more correct concerning his opinions of the principles of nature and the origin of things. He imagined that in nature there are as many kinds of principles as there are ſpecies of compound bodies, and that the peculiar form of the primary particles of which any body is compoſed, is the ſame with the quality of the compound body itſelf. For inſtance, he ſuppoſed that a piece of gold is compoſed of ſmall particles which are themſelves gold, and a bone of a great number of ſmall bones; thus, according to Anaxagoras, bodies of every kind are generated from ſimilar particles. That part of his ſyſtem is more agreeable to reaſon which explains the active principle in nature. According to Diogenes Laërtius, Anaxagoras taught, that "the univerſe conſiſts of ſmall bodies compoſed of ſimilar parts, and that mind is the beginning of motion." "He was the firſt, (ſays the ſame writer) who ſuperadded mind to matter, opening his work in this pleaſing and ſublime language: 'All things were confuſed; then came mind, and diſpoſed them in order." Plato informs us that this philoſopher taught the exiſtence of a diſpoſing mind, the cauſe of all things. Anaxagoras, according to Ariſtotle, taught that mind was "the cauſe of the world, and of all order; and that while all things elſe are compounded, this alone is pure and unmixed; and that "he aſcribes to this principle two powers, to know, and to move, ſaying, that mind put the univerſe into motion." Cicero expreſsly aſſerts, that Anaxagoras was the firſt who taught, that "the arrangement and order of all things was contrived and accompliſhed by the underſtanding and power of an infinite mind." (*Gen. Biog.*)

ANAXARCHUS, a Grecian philoſopher, who lived under Philip of Macedon and Alexander, was born in Abdera, and belonged to the ſect generally known by the name of the Eleatic. He is ſaid to have been conducted in the progreſs of his early ſtudies by the ſkilful hands of Diomenes of Smyrna and Metrodorus of Chios. He had the honour to be a companion of Alexander; and a few anecdotes tranſmitted to poſterity concerning him render it evident that he treated him with the uſual freedom of a friend. This philoſopher candidly checked the vain glory of Alexander (when elated with pride he aſpired to the honours of divinity), by pointing to his finger when he bled, ſaying, "See the blood of a mortal, not of a god." It is likewiſe reported, that on another occaſion, while indulging immoderately at a banquet, he repeated a verſe from Euripides, reminding Alexander of his mortality. It is, however, to be regretted, that the fidelity of the philoſopher was wanting at the time when the mind of Alexander was tortured with remorſe at having ſlain his friend Clitus; for it is reported that he, on that occaſion, endeavoured to ſoothe the agitated mind of Alexander, by ſaying, that "kings, like the gods, could do no wrong." It is reported that Nicocreon, king of Cyprus, expoſed him to the torture of being pounded in a mortar, and that he endured this torture with incredible patience; but as the ſame fact is reported of Zeno the Eleatic, there is reaſon to ſuppoſe that it is fabulous; and it may be added, that this narrative is inconſiſtent with the general character of Anaxarchus, who, on account of his eaſy and peaceable life, received the appellation of "The Fortunate." (*Gen. Biog.*)

Anaximander, Anaximenes.

ANAXIMANDER, a famous Greek philoſopher, born at Miletus in the 42d Olympiad, in the time of Polycrates tyrant of Samos. He was the firſt who publicly taught philoſophy, and wrote upon philoſophical ſubjects. He carried his reſearches into nature very far for the time in which he lived. It is ſaid, that he diſcovered the obliquity of the zodiac, was the firſt who publiſhed a geographical table, invented the gnomon, and ſet up the firſt ſun-dial in an open place at Lacedæmon. He taught, that infinity of things was the principal and univerſal element; that this infinite always preſerved its unity, but that its parts underwent changes; that all things came from it; and that all were about to return into it. According to all appearance, he meant by this obſcure and indeterminate principle the chaos of the other philoſophers. He aſſerted, that there is an infinity of worlds; that the ſtars are compoſed of air and fire, which are carried in their ſpheres, and that theſe ſpheres are gods; and that the earth is placed in the midſt of the univerſe, as in a common centre. He added, that infinite worlds were the product of infinity, and that corruption proceeded from ſeparation.

ANAXIMENES, born at Miletus, an eminent Greek philoſopher; friend, ſcholar, and ſucceſſor of Anaximander. He diffuſed ſome degree of light upon the obſcurity of his maſter's ſyſtem. He made the firſt principle of things to conſiſt in the air, which he conſidered as immenſe or infinite, and to which he aſcribed a perpetual motion. He aſſerted, that all things which proceeded from it were definite and circumſcribed; and that this air, therefore, was God, ſince the divine power reſided in it and agitated it. Coldneſs and moiſture, heat and motion, rendered it viſible, and dreſſed it in different forms, according to the different degrees of its condenſation. All the elements thus proceed from heat and cold. The earth was, in his opinion, one continued flat ſurface.

Anaximenes, a Greek hiſtorian and rhetorician, was born at Lampſacus about 580 years before Chriſt. Diogenes, the Cynic, laid the principles of erudition in the mind of this great man. Some writers aſcribe to him "A Treatiſe on the principles of Rhetoric," which bears the name of Ariſtotle; and it is reported that Philip of Macedon invited him to his court to inſtruct his ſon Alexander in that ſcience. Alexander was attended in his expedition againſt Perſia by this learned philoſopher and many other eminent men. The inhabitants of the city, which had the honour to give him birth, having eſpouſed the cauſe of Darius, upon Alexander's conquering them, they entreated their countryman Anaximenes to intercede with Alexander in their behalf. He humanely undertook to interpoſe for them; but the king being informed of his intention, as ſoon as he came into his preſence, ſwore that he would grant him nothing that he ſhould aſk. He inſtantly replied, "I entreat you to deſtroy Lampſacus, to burn its temples, and to ſell the inhabitants for ſlaves." Alexander, ſtruck with this dexterous reply, kept his word, and ſaved the city.

Another pleaſing anecdote is related of Anaximenes. For ſome unrecorded cauſe, he being diſpleaſed with the hiſtorian Theopompus, in order to revenge himſelf, wrote a ſevere ſatire againſt the Spartans and Thebans, in a ſtile exactly ſimilar to that of Theopompus, and under his name addreſſed it to the Athenians. Theopompus was generally believed to be the author of that work, and conſequently it brought upon him the odium and indignation of all Greece. Whilſt this action afforded an illuſtrious proof of the ſtrength of his talents, it afforded an equal evidence of the quality of his heart. The hiſtory of Philip, of Alexander, and likewiſe twelve books on the early hiſtory of Greece, were the productions of his pen, but are now unfortunately loſt. (*Gen. Biog.*)

Anaximandrians || Anceſtors.

ANAXIMANDRIANS, in the hiſtory of philoſophy, the followers of Anaximander, the moſt ancient of the philoſophical atheiſts who admitted of no other ſubſtance in nature but matter.

ANAZARBUS (Pliny), Anazarba (Stephanus); a town of Cilicia, on the river Pyramus, the birthplace of Dioſcorides, and of the poet Oppian. It was ſometimes called *Cæſarea*, in honour either of Auguſtus or of Tiberius. The inhabitants are called *Anazarbeni* (Pliny), and on coins *Anazarbeis* after the Greek idiom. It was deſtroyed by a dreadful earthquake in the year 525, along with ſeveral other important cities: but they were all repaired at a vaſt expence by the emperor Juſtin; who was ſo much affected with their misfortune, that, putting off the diadem and purple, he appeared for ſeveral days in ſackcloth.

ANBERTKEND, in the eaſtern language, a celebrated book of the Brachmans, wherein the Indian philoſophy and religion are contained. The word in its literal ſenſe denotes the ciſtern wherein is the water of life. The anbertkend is divided into 50 beths or diſcourſes, each of which conſiſts of 10 chapters. It has been tranſlated from the original Indian into Arabic, under the title of *Morat al Maani*, q. d. "the marrow of intelligence."

ANCARANO, a town of Italy, in the marquiſate of Ancona. E. Long. 14. 54. N. Lat. 42. 48.

ANCASTER, a town of Lincolnſhire, ſituated in W. Long. 30. N. Lat. 52. 30. It gives title of duke to the noble family of Bertie.

ANCENIS, a town of France, in the province of Brittany. W. Long. 1. 9. N. Lat. 47. 20.

ANCESTORS, thoſe from whom a perſon is deſcended in a ſtraight line. The word is derived from the Latin *anceſſor*, contracted from *anteceſſor*, q. d. "goer before."

Moſt nations have paid honours to their anceſtors. It was properly the departed ſouls of their forefathers that the Romans worſhipped under the denominations of *lares*, *lemures*, and *houſehold gods*. Hence the ancient tombs were a kind of temples, or rather altars, whereon oblations were made by the kindred of the deceaſed.

The Ruſſians have ſtill their anniverſary feaſts in memory of their anceſtors, which they call *roditoli ſabot*, q. d. "kinſfolk's ſabbath;" wherein they make formal viſits to the dead in their graves, and carry them proviſions, eatables, and preſents of divers other kinds. They interrogate them, with loud lamentable cries, What they are doing? How they ſpend their time? What it is they want? and the like.

The Quojas, a people of Africa, offer ſacrifices of rice and wine to their anceſtors before ever they undertake any conſiderable action. The anniverſaries of

their

Anceſtors. their deaths are always kept by their families with great ſolemnity. The king invokes the ſouls of his father and mother to make trade flouriſh and the chaſe ſucceed.

The Chineſe ſeem to have diſtinguiſhed themſelves above all other nations in the veneration they bear their anceſtors. By the laws of Confucius, part of the duty which children owe their parents conſiſts in worſhipping them when dead. This ſervice, which makes a conſiderable part of the natural religion of the Chineſe, is ſaid to have been inſtituted by the emperor Kun, the fifth in order from the foundation of that ancient empire. Hiſt. Un. tom. vii. The Chineſe have both a ſolemn and ordinary worſhip which they pay their anceſtors. The former is held regularly twice a year, viz. in ſpring and autumn, with much pomp. A perſon who was preſent at it gives the following account of the ceremonies on that occaſion: The ſacrifices were made in a chapel well adorned, where there were ſix altars furniſhed with coffers, tapers, and flowers. There were three miniſters, and behind them two young acolites. The three former went with a profound ſilence, and frequent genuflexions, towards the five altars, pouring out wine: afterwards they drew near to the ſixth, and when they came to the foot of the altar, half bowed down, they ſaid their prayers with a low voice. That being finiſhed, the three miniſters went to the altar; the officiating prieſt took up a veſſel full of wine, and drank; then he lifted up the head of a deer or goat; after which, taking fire from the altar, they all lighted a bit of paper: and the miniſter of the ceremonies turning towards the people, ſaid with a loud voice, That he gave them thanks in the name of their anceſtors for having ſo well honoured them; and in recompenſe he promiſed them, on their part, a plentiful harveſt, a fruitful iſſue, good health, and long life, and all thoſe advantages that are moſt pleaſing to men.

The Chineſe gave their anceſtors another ſimpler and more private worſhip. To this end they have in their houſes a niche or hollow place, where they put the names of their deceaſed fathers, and make prayers and offerings of perfumes and ſpices to them at certain times, with bowing, &c. They do the like at their tombs.

The Jews ſettled in China are ſaid to worſhip their anceſtors like the heathens, and with the ſame ceremonies, except that they offer not ſwines fleſh. Near their ſynagogue they have a hall, or court of anceſtors, wherein are niches for Abraham, Iſaac, &c. The Jeſuits alſo conformed, and were permitted by their general to conform to this and many other ſuperſtitious cuſtoms of the Chineſe.

There is one peculiarity of another kind, wherein the Chineſe ſhow their regard for their anceſtors; in proportion as any of their deſcendants are preferred to a higher degree or dignity, their dead anceſtors are at the ſame time preferred and ennobled with them. The kings Ven Van, Veu Van, and Cheu Cum, who were deſcended from vaſſal kings, when they mounted the imperial throne, raiſed their anceſtors from the vaſſal or depending ſtate wherein theſe had lived to the dignity of emperors; ſo that the ſame honours were for the future rendered them as if they have been emperors of China. The ſame example was followed by the ſubſequent [illegible], and now [illegible] among the grandees and literati [illegible] according to the rank which they themſelves hold in the world. [illegible] and the mother only a doctor, [illegible] but ſacrificed to as a [illegible]. The [illegible] dations, where the condition of the fathers is that of their ſons.

ANCHILOPS, (ἀγχί, near, and ὤψ, eye), in *Medicine*, denotes an [illegible] of matter, between the great angle of the eye and the noſe. If ſuffered to remain too long, or unſkilfully managed, it degenerates, the ſtagnating humours corrupt, and an ulcer is produced. When the tumour is broke, and the tears flow involuntarily, whilſt the os lachrymale is not carious, it is an *ægylops*; but when the ulcer is of a long ſtanding, deep, fetid, and the os lachrymale becomes carious, it is a *fiſtula*. The cure is by reſtriction and exciſion, tying it at the root on the glandula lachrymalis, and, when ready, cutting it off. See SURGERY *Index*.

ANCHISES, in fabulous hiſtory, a Trojan prince, deſcended from Dardanus, and the ſon of Capys. Venus made love to him in the form of a beautiful nymph; and bore him Æneas, the hero of Virgil's Æneid.

ANCHOR (*anchora*, Lat. from ἄγκυρα, Greek), a heavy, ſtrong, crooked inſtrument of iron, dropped from a ſhip into the bottom of the water, to retain her in a convenient ſtation in a harbour, road, or river.

The moſt ancient anchors are ſaid to have been of ſtone; and ſometimes of wood, to which a great quantity of lead was uſually fixed. In ſome places, baſkets full of ſtones, and ſacks filled with ſand, were employed for the ſame uſe. All theſe were let down by cords into the ſea, and by their weight ſtayed the courſe of the ſhip. Afterwards they were compoſed of iron, and furniſhed with teeth, which, being faſtened to the bottom of the ſea, preſerved the veſſel immoveable; whence ὀδοντης and *dentes* are frequently taken for anchors in the Greek and Latin poets. At firſt there was only one tooth, whence anchors were called διφασσομαι; but, in a ſhort time, the ſecond was added by Eupalamus, or Anacharſis the Scythian philoſopher. The anchors with two teeth were called [illegible] and from ancient monuments appear to have been much the ſame with thoſe uſed in our days, only the tranſverſe piece of wood upon their handles (the ſtock) is wanting in all of them. Every ſhip had ſeveral anchors; one of which, ſurpaſſing all the reſt in bigneſs and ſtrength, was peculiarly termed [illegible] and was never tied but in extreme danger; whence *anchoram ſolvere*, is proverbially applied to ſuch as are forced to their laſt refuge.

The anchors now made are contrived ſo as to ſink into the ground as ſoon as they reach it, and to hold a great ſtrain before they can be looſened or diſlodged from their ſtation. They are compoſed of a ſhank, a ſtock, a ring, and two arms with their flukes. The ſtock, which is a long piece of timber fixed acroſs the ſhank, ſerves to guide the flukes in a direction perpendicular to the ſurface of the ground: ſo that one of them ſinks into it by its own weight as ſoon as it falls, and is ſtill preſerved readily in that poſition by the ſtock,

Anchor. ſtock, which, together with the ſhank, lies flat on the bottom. In this ſituation it muſt neceſſarily ſuſtain a great effort before it can be dragged through the earth horizontally. Indeed this can only be effected by the violence of the wind or tide, or both of them, ſometimes increaſed by the turbulence of the ſea, and acting upon the ſhip ſo as to ſtretch the cable to its utmoſt tenſion, which accordingly may diſlodge the anchor from its bed, eſpecially if the ground be ſoft and oozy, or rocky. When the anchor is thus diſplaced, it is ſaid, in the ſea phraſe, to *come home*.

Plate XXXII. Fig. 2. N°1. That the figure of this uſeful inſtrument may be more clearly underſtood, let us ſuppoſe a long maſſy beam of iron erected perpendicularly, *b*, at the lower end of which are two arms, *d e*, of equal thickneſs with the beam (uſually called the *ſhank*), only that they taper towards the points, which are elevated above the horizontal plane at an angle of 30 degrees, or inclined to the ſhank at an angle of 60 degrees; on the upper part of each arm (in this poſition) is a fluke or thick plate of iron, *g h*, commonly ſhaped like an iſoſceles triangle whoſe baſe reaches inwards to the middle of the arm. On the upper end of the ſhank is fixed the ſtock tranſverſed with the flukes; the ſtock is a long beam of oak, *f*, in two parts, ſtrongly bolted and hooped together with iron rings. See alſo N° 2. Cloſe above the ſtock is the ring *a*, to which the cable is faſtened or *bent;* the ring is curiouſly covered with a number of pieces of ſhort rope, which are twiſted about it ſo as to form a very thick texture or covering called the *puddening*, and uſed to preſerve the cable from being fretted or chafed by the iron.

Every ſhip has, or ought to have, three principal anchors, with a cable to each, viz. the ſheet, *maitreſſe-ancre* (which is the *anchora ſacra* of the ancients); the beſt bower, *ſecond ancre;* and ſmall bower, *ancre d'affourche*, ſo called from their uſual ſituation on the ſhip's bows. There are beſides ſmaller anchors, for removing a ſhip from place to place in a harbour or river, where there may not be room or wind for ſailing; theſe are the ſtream anchor, *ancre de tone;* the kedge and grappling, *grapin:* this laſt, however, is chiefly deſigned for boats.

Method of Making ANCHORS. The goodneſs of the anchor is a point of great importance. Great care is therefore to be taken, that the metal it is made of be neither too ſoft nor too brittle; the latter rendering it liable to break, and the former to ſtraighten.

The ſhank, arms, and flukes, are firſt forged ſeparately; then the hole is made at one end of the ſhank for the ring, which being alſo previouſly forged, is put into the hole of the ſhank, and the two ends ſhut together. After which the arms are ſhut to the ſhank one after the other, and the anchor is finiſhed.

Proof is made of anchors by raiſing them to a great height, and then letting them fall again on a kind of iron block placed acroſs for the purpoſe. To try whether the flukes will turn to the bottom and take hold of the ground, they place the anchor on an even ſurface, with the end of one of the flukes, and one of the ends of the ſtock reſting on the ſurface: in caſe the another turns, and the point of the fluke riſes upwards, the anchor is good.

In England, France, and Holland, anchors are made of forged iron; but in Spain they are ſometimes made of copper, and likewiſe in ſeveral parts of the South ſea. Anchor

For the proportions of anchors, according to Manwaring, the ſhank is to be thrice the length of one of the flukes, and half the length of the beam. According to Aubin, the length of the anchor is to be four tenths of the greateſt breadth of the ſhip; ſo that the ſhank, *e. gr.* of an anchor in a veſſel 30 feet wide, is to be 12 feet long. When the ſhank is, for inſtance, eight feet long, the two arms are to be ſeven feet long, meaſuring them according to their curvity. As to the degree of curvity given the arms, there is no rule for it; the workmen are here left to their own diſcretion.

The latter writer obſerves, that the anchor of a large heavy veſſel is ſmaller in proportion than that of a leſſer and lighter one. The reaſon he gives is, that though the ſea employs an equal force againſt a ſmall veſſel as againſt a great one, ſuppoſing the extent of wood upon which the water acts to be equal in both, yet the little veſſel, by reaſon of its ſuperior lightneſs, does not make ſo much reſiſtance as the greater; the defect whereof muſt be ſupplied by the weight of the anchor.

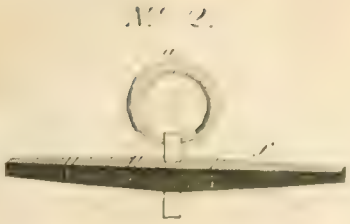
From theſe and other hydroſtatic principles, the following table has been formed; wherein is ſhown by means of the ſhip's breadth within, how many feet the beam or ſhank ought to be long, giving it four-tenths or two-fifths of the ſhip's breadth within: by which proportion might be regulated the length of the other parts of the anchor. In this table is repreſented likewiſe the weight an anchor ought to be for a ſhip from eight feet broad to 45, increaſing by one foot's breadth; ſuppoſing that all anchors are ſimilar, or that their weights are as the cubes of the lengths of the ſhanks.

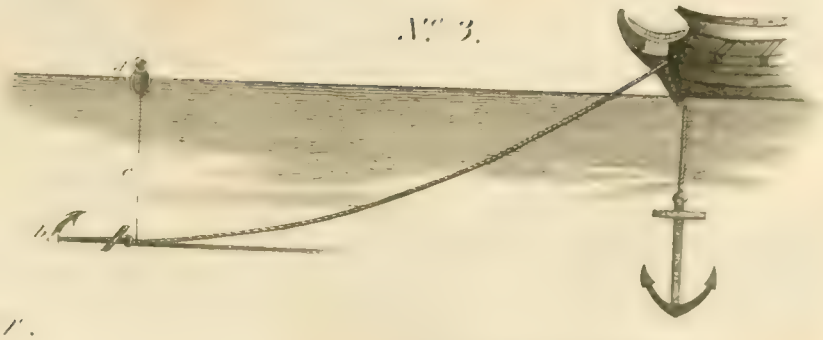
Breadth of the Veſſel. *Feet.*	Length of the Anchor. *Feet.*	Weight. *Pounds.*
8	$3\frac{1}{5}$	33
9	$3\frac{3}{5}$	47
10	4	64
11	$4\frac{2}{5}$	84
12	$4\frac{4}{5}$	110
13	$5\frac{1}{5}$	140
14	$5\frac{2}{5}$	175
15	6	216
16	$6\frac{2}{5}$	262
17	$6\frac{4}{5}$	314
18	$7\frac{2}{5}$	373
19	$7\frac{3}{5}$	439
20	8	512
21	$8\frac{2}{5}$	592
22	$8\frac{4}{5}$	681
23	$9\frac{1}{5}$	778
24	$9\frac{3}{5}$	884
25	10	000
26	$10\frac{2}{5}$	1124
27	$10\frac{4}{5}$	1259
28	$11\frac{1}{5}$	14 5
29	$11\frac{3}{5}$	1562
30	12	1728
31	$12\frac{2}{5}$	1906

Breadth

Anchor.

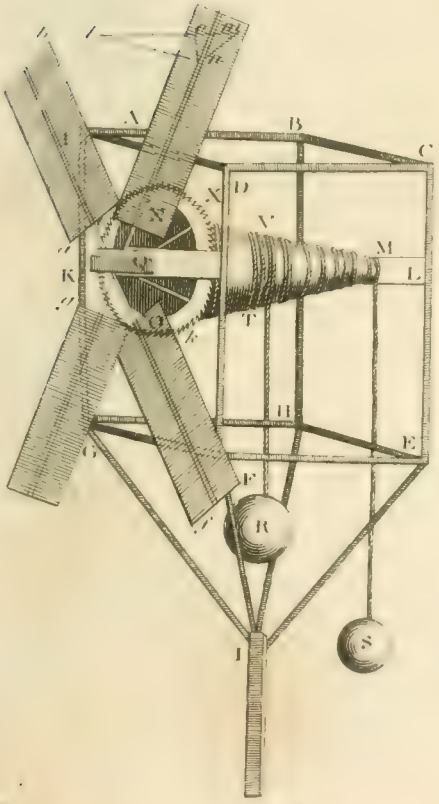
Fig. 1.





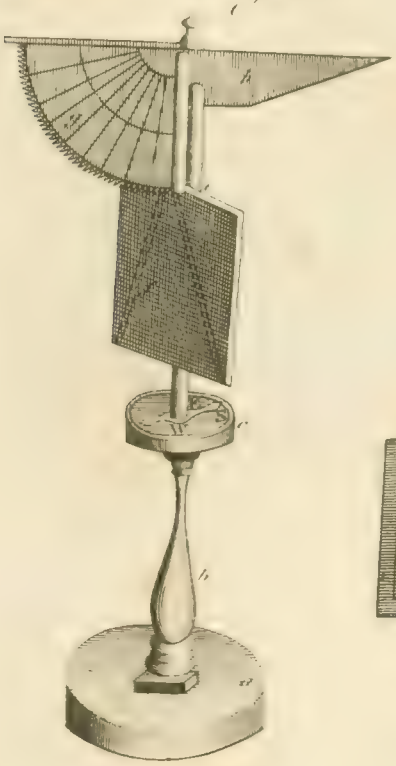
Anemometer.

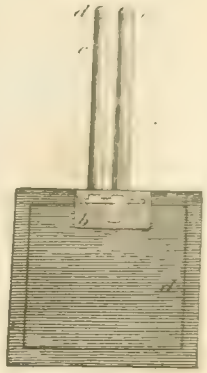
Fig. 2.



Anemoscope.

Fig. 3.





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Anchor.

Breadth of the Veſſel. Feet.	Length of the Anchor. Feet.	Pounds.
32	12¾	2097
33	13⅛	2300
34	13½	2514
35	14	2742
36	14½	2986
37	14¾	3242
38	15⅛	3512
39	15½	3796
40	16	4096
41	16½	4426
42	16¾	4742
43	17⅛	5088
44	17½	5451
45	18	5832

M. Bouguer, in his *Traité de Navire*, directs to take the length of the ſhank in inches, and to divide the cube of it by 1160 for the weight. The reaſon is obvious; becauſe the quotient of the cube of 201 inches, which is the length of an anchor weighing 7000lb. divided by the weight, is 1160; and therefore, by the rule of three, this will be a common diviſor for the cube of any length, and a ſingle operation will ſuffice.

The ſame author gives the following dimenſions of the ſeveral parts of an anchor. The two arms generally form the arch of a circle, whoſe centre is three-eighths of the ſhank from the vertex, or point where it is fixed to the ſhank; and each arm is equal to the ſame length, or the radius; ſo that the two arms together make an arch of 120 degrees: the flukes are half the length of the arms, and their breadth two-fifths of the ſaid length. With reſpect to the thickneſs, the circumference at the throat, or vertex of the ſhank, is generally made about a fifth part of its length, and the ſmall end two-thirds of the throat; the ſmall end of the arms of the flukes, three-fourths of the circumference of the ſhank at the throat. Theſe dimenſions ſhould be greater when the iron is of a bad quality, eſpecially if caſt iron is uſed inſtead of forged iron.

At ANCHOR, the ſituation of a ſhip which rides by her anchor in a road or haven, &c. Plate XXXIII. fig. 1. N° 3. repreſents the fore part of a ſhip as riding in this ſituation. See alſo *Bour-Rope*.

To fiſh the ANCHOR, to draw up the flukes upon the ſhip's ſide after it is catted. See the articles DAVIT and FISH.

To ſteer the ſhip to her ANCHOR, is to ſteer the ſhip's head towards the place where the anchor lies when they are heaving the cable into the ſhip; that the cable may thereby enter the hauſe with leſs reſiſtance, and the ſhip advance towards the anchor with greater facility.

ANCHOR-Ground is a bottom which is neither too deep, too ſhallow, nor rocky; as in the firſt the cable bears too nearly perpendicular, and is thereby apt to jerk the anchor out of the ground; in the ſecond, the ſhip's bottom is apt to ſtrike at low water, or when the ſea runs high, by which ſhe is expoſed to the danger of ſinking; and in the third, the anchor is liable to hood the broken and pointed ends of rocks, and tear away its flukes, whilſt the cable, from the ſame cauſe, is conſtantly in danger of being cut through as it rubs on their edges. Anchor Ancienty

ANCHOR, in *Architecture*, is a ſort of carving ſomewhat reſembling an anchor. It is commonly placed as part of the enrichment of the boultins of capitals of the Tuſcan, Doric, and Ionic orders, and alſo of the boultins of bed mouldings of the Doric, Ionic, and Corinthian cornices, anchors and eggs being carved alternately through the whole building.

ANCHORS, in *Heraldry*, are emblems of hope, and are taken for ſuch in a ſpiritual as well as a temporal ſenſe.

ANCHORAGE, in *Law*, is a duty upon ſhips for the uſe of the port or harbour where they caſt anchor.

ANCHOVY, in *Ichthyology*, the Engliſh name of the clupea encraſicolus. See CLUPEA, ICHTHYOLOGY *Index*.

Anchovy-Pear. See GRIAS.

ANCHUSA, ALKANET or BUGLOSS. See BOTANY *Index*.

ANCHYLOBLEPHARON. See ANCYLOBLEPHARON.

ANCHYLOPS. See ANCHILOPS.

ANCHYLOSIS. See ANCYLOSIS.

ANCIENT, or ANTIENT, a term applied to things which exiſted long ago; thus we ſay, ancient nations, ancient cuſtoms, &c. See ANTIQUITIES.

ANCIENT, ſometimes denotes elderly, or of long ſtanding, in oppoſition to young, or new; thus we ſay, an ancient barriſter, ancient buildings.

ANCIENT, in a military ſenſe, denotes either the enſign or colours.

ANCIENT, in ſhips of war, the ſtreamer or flag borne in the ſtern.

ANCIENT DEMESNE, in *Engliſh Law*, is a tenure, whereby all manors belonging to the crown in William the Conqueror's and St Edward's time were held. The numbers, names, &c. hereof were entered by the Conqueror, in a book called *Domeſday Book*, yet remaining in the Exchequer; ſo that ſuch lands as by that book appeared to have belonged to the crown at that time, are called *ancient demeſne*.—The tenants in ancient demeſne are of two ſorts; one who hold their lands frankly by charter; the other by copy of court-roll, or by the verge, at the will of the lord, according to the cuſtom of the manor.—The advantages of this tenure are, 1. That tenants holding by charter cannot be rightfully impleaded out of their manor; and, when they are, they may abate the writ, by pleading the tenure. 2. They are free from toll for all things relating to their livelihood and huſbandry; nor can be impannelled on any inqueſt.—Theſe tenants held originally by ploughing the king's land, plaſhing his hedges, and the like ſervice, for the maintenance of his houſehold; and it was on this account that ſuch liberties were given them, for which they may have writs of *monſtraverunt* to ſuch as take the duties of toll, &c.—No lands are to be accounted ancient demeſne, but ſuch as are held in ſocage. Whether land be ancient demeſne or not, ſhall be tried by the book of DOMESDAY.

ANCIENTY, in ſome ancient ſtatutes, is uſed for elderſhip or ſeniority. The elder ſiſter can demand no

Ancillon. more than her other ſiſters, beſide the chief meſne, by reaſon of her ancienty. This word is uſed in the ſtatute of Ireland, 14 Henry III.

ANCILLON, David, a miniſter of the reformed church at Metz, where he was born the 17th of March 1617. He ſtudied from the ninth or tenth year of his age in the Jeſuits college, where he gave ſuch proofs of his genius, that the heads of the ſociety tried every means to draw him over to their religion and party; but he continued firm againſt their attacks. He went to Geneva in 1633; and ſtudied divinity under Spanheim, Diodati, and Tronchin, who conceived a very great eſteem for him. He left Geneva in April 1641, and offered himſelf to the ſynod of Charenton in order to take upon him the office of a miniſter: his abilities were greatly admired by the examiners, and the whole aſſembly were ſo highly pleaſed with him, that they gave him the church of Meaux, the moſt conſiderable then unprovided for. Here he acquired a vaſt reputation for his learning, eloquence, and virtue, and was even highly reſpected by thoſe of the Roman Catholic communion. He returned to his own country in the year 1653, where he remained till the revocation of the edict of Nantes in 1685. He retired to Francfort after this fatal blow: and having preached in the French church at Hanau, the whole congregation were ſo edified by it, that they immediately called together the heads of the families, in order to propoſe that he might be invited to accept of being miniſter there. The propoſition was agreed to; and he began the exerciſe of his miniſtry in that church about the end of the year 1685. His preaching made ſo great a noiſe at Hanau, that the profeſſors of divinity, and the German and Dutch miniſters, attended his ſermons frequently: the count of Hanau himſelf, who had never before been ſeen in the French church, came thither to hear Mr Ancillon: they came from the neighbouring parts, and even from Francfort; people who underſtood nothing of French flocked together with great eagerneſs, and ſaid, they loved to ſee him ſpeak. This occaſioned a great jealouſy in the two other miniſters; which tended to make his ſituation uneaſy. He therefore went to Berlin; where he met with a kind reception from his highneſs the elector, and was made miniſter of the city. Here he had the pleaſure of ſeeing his eldeſt ſon made judge and director of the French in the ſame city, and his other ſon rewarded with a penſion and entertained at the univerſity of Francfort upon the Oder. He had likewiſe the ſatisfaction of ſeeing his brother made judge of all the French in the ſtates of Brandenburg; and Mr Cayart his ſon-in-law, engineer to his electoral highneſs. He enjoyed theſe agreeable circumſtances, and ſeveral others, till his death, which happened at Berlin the 3d of September 1692, when he was 75 years of age.—Mr Ancillon having got a conſiderable fortune by marriage, was enabled thereby to gratify his paſſion for books; his library was accordingly very curious and large, and he increaſed it every day with all that appeared new and important in the republic of letters, ſo that at laſt it was one of the nobleſt collections in the hands of any private perſon in the kingdom. He publiſhed a book, in quarto, in which the whole diſpute concerning Traditions is fully examined: he alſo wrote an apology for Luther, Zuinglius, Calvin, and Beza, and ſeveral other pieces. Anclam ‖ Ancony.

ANCLAM, a ſtrong town of Germany, in the circle of Upper Saxony, and duchy of Pomerania, remarkable for its excellent paſtures. It is ſeated on the river Pene. E. Long. 14. 5. N. Lat. 54. 10.

ANCLE, or Ankle. See Ankle.

ANCONA, Marquisate of, a province in the pope's territories in Italy. It lies between the gulf of Venice and the Appenines, which bound it on the north; Abruzzo on the eaſt; the duchy of Spoletto, and that of Urbino, on the weſt. The air is indifferent; but the ſoil is fruitful, particularly in hemp and flax; and there is great plenty of wax and honey. It contains ſeveral large towns, as Fermo, Loretto, Recanati, Macerata, Jeſi, Tolentino, Aſcoli, Oſimo, St Severino, Monte Alto, Camerino, and Ripatranſone, which are all archiepiſcopal or epiſcopal ſees.

Ancona, a ſea-port town of Italy, the capital of the marquiſate of that name, and the ſee of a biſhop. It was formerly the fineſt port in all Italy, being built by the emperor Trajan, about the year 115; but was almoſt ruined, and its trade loſt: however, it has again begun to revive. Its harbour is the beſt in all the pope's dominions. The town lies round it on two hills; one of which is at the point of Cape St Syriaco, from whence there is a delightful proſpect. On the other ſtands the citadel, which commands the town and harbour. The ſtreets of this city are narrow and uneven; and the public and private buildings inferior to thoſe of the other great towns in Italy. The cathedral is a low dark ſtructure; and though the front is covered with fine marble, the architecture has neither beauty nor regularity. The church of St Dominic, and that of the Franciſcans, have each an excellent picture by Titian. The exchange, where the merchants meet, is a handſome ſquare portico, in which is an equeſtrian ſtatue of Trajan, who firſt built the port. At the four corners are four other ſtatues. The triumphal arch of Trajan remains almoſt entire, with its inſcription. The common people in this town are a little particular and fantaſtical in their dreſs, but the better ſort follow the French mode. It is a great thoroughfare from the north of Italy to Loretto; which renders proviſions very dear. The tide does not riſe here above a foot, and near the Mediterranean it is ſcarce viſible. E. Long. 15. 5. N. Lat. 43. 36.

ANCONES, in *Architecture*, the corners or quoins of walls, croſs-beams, or rafters.—Vitruvius calls the *conſoles* by the ſame name.

ANCONY, in the iron-works, a piece of half-wrought iron, of about three-quarters of 100 weight, and of the ſhape of a bar in the middle, but rude and unwrought at the ends. The proceſs for bringing the iron to this ſtate is this: They firſt melt off a piece from a ſow of caſt iron, of the proper ſize; this they hammer at the forge into a maſs of two feet long, and of a ſquare ſhape, which they call a *bloom*; when this is done, they ſend it to the finery; where, after two or three heats and workings, they bring it to this figure, and call it an *ancony*. The middle part beat out at the finery, is about three feet long, and of the ſhape and thickneſs the whole is to be; this is then ſent to the chafery, and there the ends are wrought to the ſhape

of

Ancorarum Urbs || Ancyle.

of the middle, and the whole made into a bar. See Bar.

ANCORARUM URBS, (*Αγκυρων Πολις*), a city in the Nomos Aphroditopolites, towards the Red ſea; ſo called becauſe there was in the neighbourhood a ſtone quarry, in which they hewed ſtone anchors (Ptolemy) before iron anchors came to be uſed. The gentilitious name is *Ancyropolites* (Stephanus).

ANCOURT, Florent Carton d', an eminent French actor and dramatic writer, was born at Fontainbleau, October 1661. He ſtudied in the Jeſuits college at Paris under Father de la Rue; who, diſcovering in him a remarkable vivacity and capacity for learning, was extremely deſirous of engaging him in their order; but Ancourt's averſion to a religious life rendered all his efforts ineffectual. After he had gone through a courſe of philoſophy, he applied himſelf to the civil law, and was admitted advocate at 17 years of age. But falling in love with an actreſs, he was induced to go upon the ſtage, and he married her. As he had all the qualifications neceſſary for the theatre, he ſoon greatly diſtinguiſhed himſelf: and not being ſatisfied with the applauſe only of an actor, he began to write pieces for the ſtage; many of which had ſuch prodigious ſucceſs, that moſt of the players grew rich from the profits of them. His merit in this way procured him a very favourable reception at court; and Louis XIV. ſhowed him many marks of his favour. His ſprightly converſation and polite behaviour made his company agreeable to all the men of figure both at court and in the city, and the moſt conſiderable perſons were extremely pleaſed to have him at their houſes. Having taken a journey to Dunkirk, to ſee his eldeſt daughter who lived there, he took the opportunity of paying his compliments to the elector of Bavaria, who was then at Bruſſels: this prince received him with the utmoſt civility; and having detained him a conſiderable time, diſmiſſed him with a preſent of a diamond valued at 1000 piſtoles: he likewiſe rewarded him in a very generous manner, when, upon his coming to Paris, Ancourt compoſed an entertainment for his diverſion. Ancourt began at length to grow weary of the theatre, which he quitted in Lent 1718, and retired to his eſtate of Courcelles le Roy, in Berry, where he applied himſelf wholly to devotion, and compoſed a tranſlation of David's Pſalms in verſe, and a ſacred tragedy, which were never printed. He died the 6th of December 1726, being 65 years of age.—The plays which he wrote are 52 in all; moſt of which were printed ſeparately at the time when they were firſt repreſented: they were afterwards collected into five volumes, then into ſeven, and at laſt into nine. This laſt edition is moſt complete.

ANCRE, a ſmall town of France, in Picardy, with the title of a marquiſate, ſeated on a little river of the ſame name. E. Long. 2. 45. N. Lat. 49. 59.

ANCUS Martius, the fourth king of the Romans, ſucceeded Tullus Hoſtilius, 639 years before Chriſt. He defeated the Latins, ſubdued the Fidenates, conquered the Sabines, Volſci, and Veientines, enlarged Rome by joining to it Mount Janiculum, and made the harbour of Oſtia. He died about 615 years before the Chriſtian era.

ANCYLE, in antiquity, a kind of ſhield that fell, as was pretended, from heaven, in the reign of Numa Pompilius, at which time, likewiſe, a voice was heard declaring that Rome ſhould be miſtreſs of the world as long as ſhe ſhould preſerve this holy buckler. It was kept with great care in the temple of Mars, under the direction of twelve prieſts; and leſt any ſhould attempt to ſteal it, eleven others were made ſo like, as not to be diſtinguiſhed from the ſacred one. Theſe ancylia were carried in proceſſion every year round the city of Rome.

Ancyle, in *Surgery*. See Ancylosis.

ANCYLOBLEPHARON, (from *αγκυλος*, *bent*, and *βλεφαρον*, an *eyelid*); a diſeaſe of the eye, when cloſes the eyelids. Sometimes the eyelids grow together, and alſo to the tunica albuginea of the eye, from carelеſſneſs when there is an ulcer in theſe parts. Both theſe caſes are called *ancyloblepharon* by the Greeks. This diſorder muſt be diſtinguiſhed from that coalition of the eyelids which happens from viſcid matter gluing them together. If the coheſion is on the corner, the ſight is inevitably loſt. This hath ſometimes happened in the ſmall pox. If there is only a growing together of the eyelids, they may be ſeparated with the ſpecillum, and pledgets kept between them to prevent their reunion. If the eyelids adhere to the eye, they are to be ſeparated by a fine edged knife; and their reunion is to be prevented by a proper uſe of injections, and lint placed between them, after dipping it in ſome proper liniment.

ANCYLOGLOSSUM, (from *αγκυλος*, *crooked*, and *γλωσσα*, *the tongue*); a contraction of the ligaments of the tongue. Some have this imperfection from their birth, others from ſome diſeaſe. In the firſt caſe, the membrane which ſupports the tongue is too ſhort or too hard: in the latter, an ulcer under the tongue, healing and forming a cicatrix, is ſometimes the cauſe: Theſe ſpeak with ſome difficulty. The ancyloglоſſi by nature are late before they ſpeak; but when they begin, they ſoon ſpeak properly. Theſe we call *tongue-tied*. Mauriceau ſays, that in this caſe it is a ſmall membranous production, which extends from the frænulum to the tip of the tongue, that hinders the child from ſucking, &c. He juſtly condemns the cruel practice among nurſes, of tearing this membrane with their nails; for thus ulcers are ſometimes formed, which are of difficult cure: he adviſes to ſnip it with ſciſſars in two or three places, taking care not to extend the points of the ſciſſars ſo far as the frænulum. The inſtances rarely occur which require any kind of aſſiſtance; for if the child can thruſt the tip of its tongue to the outer edge of its lip, this diſeaſe does not exiſt; and if the tongue is not greatly reſtrained, the frænulum will ſtretch by the child's ſucking and crying.

ANCYLOSIS, in *Surgery*, implies a diſtortion or ſtiffneſs of the joints, cauſed by a ſettlement of the humours, or a diſtention of the nerves; and therefore remedies of a mollifying and relaxing nature are required.

ANCYRA, the capital of Galatia, (Livy, Pliny, Ptolemy): at no great diſtance from the river Halys, (Livy): ſaid to be built by Midas, king of Phrygia, and to take its name from an anchor found there (Pauſanias). It was greatly improved by Auguſtus, deem-

Ancyſtrum ‖ Andely

ed the ſecond founder of it, as appears from the *Marmor Ancyranum*. It is now called *Angura*, or *Angoura*. E. Long. 33°. N. Lat. 41. 20.

ANCYSTRUM. See BOTANY *Index*.

ANDABATÆ, in antiquity, a ſort of gladiators, who, mounted on horſeback or in chariots, fought hoodwinked, having a helmet that covered their eyes.

ANDALUSIA, is the moſt weſtern province of Spain, having Eſtremadura and La Mancha on the north; the kingdom of Granada, the ſtraits of Gibraltar, and the ocean, on the eaſt and ſouth; and on the weſt, the kingdom of Algarva in Portugal, from which it is ſeparated by the river Guadiana. It is about 182 miles long, and 150 broad. The chief cities and towns are Seville the capital, Baeza, Gibraltar, Cordova, Cadiz, Medina Sidonia, Jaen, Port St Mary, &c. It is the beſt, moſt fruitful, and the richeſt part of all Spain. There is good air, a ſerene ſky, a fertile ſoil, and a great extent of ſea coaſt fit for commerce.

New ANDALUSIA, a diviſion of the province of Terra Firma in South America, whoſe boundaries cannot be well aſcertained, as the Spaniards pretend a right to countries in which they have never eſtabliſhed any ſettlements. According to the moſt reaſonable limits, it extends in length 500 miles from north to ſouth, and about 270 in breadth from eaſt to weſt. The interior country is woody and mountainous, variegated with fine valleys that yield corn and paſturage. The produce of the country conſiſts chiefly in dying drugs, gums, medicinal roots, brazil wood, ſugar, tobacco, and ſome valuable timber. To this province alſo belonged five valuable pearl fiſheries. The capital of New Andaluſia is Comana, Cumana, or New Corduba, ſituated in N. Lat. 9. 55. about nine miles from the north ſea. Here the Spaniards laid the foundation of a town in the year 1520. The place is ſtrong by nature, and fortified by a caſtle capable of making a vigorous defence; as appeared in the year 1670, when it was aſſaulted by the Bucaniers, who were repulſed with very great ſlaughter.

ANDAMAN or ANDEMAN Iſlands, in the Eaſt Indies, ſituated about 80 leagues diſtance from Tanaſſerim on the coaſt of Siam. They are but little known. The Eaſt India ſhips ſometimes touch at them, and are ſupplied by the natives with rice, herbs, and fruits. The inhabitants are by ſome repreſented as a harmleſs inoffenſive race of men, and by others as cannibals. E. Long 92. 0. N. Lat. from 10° to 15°.

ANDANTE, in *Muſic*, ſignifies a movement moderately ſlow, between *largo* and *allegro*.

ANDECAVI, (Tacitus); ANDEGAVI, (Pliny); ANDES, (Cæſar); ANDI, (Lucan): A people of Gallia Celtica, having the Turones to the eaſt, the Namnetes to the weſt, the Pictones to the ſouth, and the Aulerci Cœnomani to the north: now *Anjou*.

ANDEGAVI, or ANDEGAVUS, a town of Gallia Celtica, (Pliny, Ptolemy); now *Angiers*. Called *Audecavi*, (Tacitus). W. Long. 30. N. Lat. 47. 30.

ANDELY, a town of Normandy in France, parted in two by a paved cauſeway. Here is a fountain to which pilgrims flock from all parts, to be cured of their diſorders, on the feaſt day of the ſaint to which it is dedicated. It is 20 miles ſouth-eaſt of Ronen, and five north-weſt of Paris. E. Long. 1. 30. N. Lat. 49. 20.

Andena ‖ Anderſon.

ANDENA, in old writings, denotes the ſwath made in mowing of hay, or as much ground as a man could ſtride over at once.

ANDEOL, SAINT, a town of France, in the Vivarais, five miles ſouth of St Viviers, whoſe biſhop formerly reſided there. E. Long. 2. 50. N. Lat. 44. 24.

ANDERAB, the moſt ſouthern city of the province of Balkh, poſſeſſed by the Uſbeck Tartars. It is very rich and populous, but a place of no great ſtrength. The neighbouring mountains yield excellent quarries of lapis lazuli, in which the Bukhars drive a great trade with Perſia and India.—This city is ſituated at the foot of the mountains dividing the dominions of the Great Mogul and Perſia from Great Bukharia. As there is no other way of croſſing theſe mountains but by the road through this city, all travellers with goods muſt pay 4 per cent. On this account the khan of Balkh maintains a good number of ſoldiers in the place.

ANDERNACHT, a city of Cologne, in the circle of the Lower Rhine. It is ſituated in a plain on the river Rhine; and is fortified with a wall, caſtle, and bulwarks. It has a trade in ſtone jugs and pitchers, which are ſent to the mineral waters at Dunchſtein. There are three monaſteries here and ſeveral churches. E. Long. 7. 4. N. Lat. 50. 27.

ANDERO, SAINT, a ſea port town in the bay of Biſcay, in Old Caſtile, ſeated on a ſmall peninſula. It is a trading town, and contains about 700 houſes, two pariſh churches, and four monaſteries. Here the Spaniards build and lay up ſome of their men of war. W. Long. 4. 30. N. Lat. 43. 20.

ANDERSON, SIR EDMUND, a younger ſon of an ancient Scotch family ſettled in Lincolnſhire. He was ſome time a ſtudent of Lincoln-college, Oxford; and removed from thence to the Inner Temple, where he applied himſelf diligently to the ſtudy of the law, and became a barriſter. In the ninth of Queen Elizabeth he was both Lent and Summer reader, and in the 16th double reader. He was appointed her majeſty's ſerjeant at law in the 19th year of her reign; and ſome time after, one of the juſtices of the aſſize. In 1582 he was made lord chief juſtice of the common pleas, and in the year following was knighted. He held his office to the end of his life, died in the year 1605, and was buried at Eyeworth in Bedfordſhire. He was an able, but punctilious lawyer; a ſcourge to the Puritans; and a ſtrenuous ſupporter of the eſtabliſhed church. His works are, 1. Reports of many principal caſes argued and adjudged in the time of Queen Elizabeth in the common bench. Lond. 1644, fol. 2. Reſolutions and judgments on the caſes and matter, agitated in all courts of Weſtminſter, in the latter end of the reign of Queen Elizabeth. Publiſhed by John Goldſborough, Eſq. Lond. 1653, 4to. Beſides theſe, there is a manuſcript copy of his readings ſtill in being.

ANDERSON, *Adam*, a native of Scotland, was brother to the reverend James Anderſon, D. D. editor of the *Diplomata Scotiæ* and *Royal Genealogies*, many years ſince miniſter of the Scots Preſbyterian church in

Anderſon, Andes.

in Swallow-ſtreet, Piccadilly, and well known in thoſe days among the people of that perſuaſion reſident in London by the name of Biſhop Anderſon, a learned but imprudent man, who loſt a conſiderable part of his property in the fatal year 1720. He married, and had iſſue a ſon, and a daughter who was the wife of an officer in the army.

Adam Anderſon was for 40 years a clerk in the South-ſea houſe; and at length arrived at his acmé there, being appointed chief clerk of the Stock and New Annuities, which office he retained till his death. He was appointed one of the truſtees for eſtabliſhing the colony of Georgia in America; and was alſo one of the court of aſſiſtants of the Scots corporation in London. The time of the publication of his "Hiſtorical and Chronological Deduction of Trade and Commerce," a work replete with uſeful information, was about the year 1762. He was twice married; by the firſt wife he had iſſue a daughter, married to one Mr Hardy, an apothecary in the Strand, who are both dead without iſſue; he afterwards became the third huſband of the widow of Mr Coulter, formerly a wholeſale linendraper in Cornhill, by whom he had no iſſue. She was, like him, tall and graceful; and her face has been thought to have ſome reſemblance to that of the ever-living counteſs of Deſmond, given in Mr Pennant's firſt Tour in Scotland. Mr Anderſon died at his houſe in Red Lion-ſtreet, Clerkenwell, January 10. 1775. He had a good library of books, which were ſold by his widow, who ſurvived him ſeveral years, and died in 1781.

ANDES, a great chain of mountains in South America, which running from the moſt northern part of Peru to the ſtraits of Magellan, between 3000 and 4000 miles, are the longeſt and moſt remarkable in the world. The Spaniards call them the *Cordillera de los Andes*. They form two ridges, the lowermoſt of which is overſpread with woods and groves, and the uppermoſt covered with everlaſting ſnow. Thoſe who have been at the top, affirm, that the ſky is always ſerene and bright; the air cold and piercing; and yet ſo thin, that they were ſcarce able to breathe, and the reſpiration was much quicker than ordinary; and this is attended with retching and vomiting; which, however, has been conſidered by ſome as merely accidental. When they looked downwards, the country was hid by the clouds that hovered on the mountains ſides. The mountains juſt mentioned, which have been frequently aſcended, are much inferior in height to many others in this enormous chain. The following is the account given of the mountain called *Pichincha*, by the mathematicians ſent by the kings of France and Spain to make obſervations in relation to the figure of the earth.

Soon after our artiſts arrived at Quito, they determined to continue the ſeries of the triangles for meaſuring an arch of the meridian to the ſouth of that city: the company accordingly divided themſelves into two bodies, conſiſting of French and Spaniards, and each retired to the part aſſigned them. Don George Juan and M. Godin, who were at the head of one party, went to the mountain of Pambamarca; while M. Bouguer, de la Condamine, and Don Ulloa, together with their aſſiſtants, climbed up to the higheſt ſummit of Pichincha. Both parties ſuffered extremely, as well from the ſeverity of the cold as from the impetuoſity of the winds, which on theſe heights blow with inceſſant violence; difficulties the more painful, as they had been little uſed to ſuch ſenſations. Thus in the torrid zone, nearly under the equinoctial, where it is natural to ſuppoſe they had moſt to fear from the heat, their greateſt pain was cauſed by the exceſſiveneſs of the cold.

Anders.

Their firſt ſcheme for ſhelter and lodging in theſe uncomfortable regions, was to pitch a field-tent for each company; but on Pichincha this could not be done from the narrowneſs of the ſummit; they were therefore obliged to be contented with a hut ſo ſmall that they could hardly all creep into it. Nor will this appear ſtrange, if the reader conſiders the bad diſpoſition and ſmallneſs of the place, it being one of the loftieſt crags of a rocky mountain, 100 fathoms above the higheſt part of the deſert of Pichincha. Such was the ſituation of their manſion, which, like all the other adjacent parts, ſoon became covered with ice and ſnow. The aſcent up this ſtupendous rock, from the baſe or the place where the mules could come, to their habitation was ſo craggy as only to be climbed on foot; and to perform it coſt them four hours continual labour and pain, from the violent efforts of the body, and the ſubtlety of the air; the latter being ſuch as to render reſpiration difficult.

The ſtrange manner of living to which our artiſts were reduced during the time they were employed in a geometrical menſuration of ſome degrees of the meridian, may not perhaps prove unentertaining to the reader; and therefore the following account is given as a ſpecimen of it. The deſert of Pichincha, both with regard to the operations performed there and its inconveniences, differing very little from others, an idea may be very eaſily formed of the fatigues, hardſhips, and dangers, to which they were continually expoſed during the time they were proſecuting the enterpriſe, with the conduct of which they had been honoured. The principal difference between the ſeveral deſerts conſiſted in their greater or leſſer diſtance from places where they could procure proviſions; and in the inclemency of the weather, which was proportionate to the height of the mountains, and the ſeaſon of the year.

They generally kept within their hut. Indeed they were obliged to do this, both on account of the intenſeneſs of the cold, the violence of the wind, and their being continually involved in ſo thick a fog, that an object at ſix or eight paces was hardly diſcernible. When the fog cleared up, the clouds by their gravity moved nearer to the ſurface of the earth, and on all ſides ſurrounded the mountains to a vaſt diſtance, repreſenting the ſea, with their rock like an iſland in the centre of it. When this happened, they heard the horrid noiſes of the tempeſts, which then diſcharged themſelves on Quito and the neighbouring country. They ſaw the lightnings iſſue from the clouds, and heard the thunders roll far beneath them: and whilſt the lower parts were involved in tempeſts of thunder and rain they enjoyed a delightful ſerenity; the wind was abated, the ſky clear, and the enlivening rays of the ſun moderated the ſeverity of the cold. But their circumſtances were very different when the clouds roſe: their thickneſs rendered reſpiration difficult; the ſnow and hail fell continually; and the wind returned with

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all its violence; ſo that it was impoſſible entirely to overcome the fears of being, together with their hut, blown down the precipice, on whoſe edge it was built, or of being buried under it by the daily accumulations of ice and ſnow.

The wind was often ſo violent in theſe regions, that its velocity dazzled the ſight, whilſt their fears were increaſed from the dreadful conculſions of the precipice, cauſed by the fall of enormous fragments of rocks. Theſe crathes were the more alarming, as no other noiſes are heard in theſe deſerts; and during the night, their reſt, which they ſo greatly wanted, was frequently diſturbed by ſuch ſudden ſounds. When the weather was any thing fair with them, and the clouds gathered about ſome of the other mountains which had a connexion with their obſervations, ſo that they could not make all the uſe they deſired of this interval of good weather, they left their hut to exerciſe themſelves. Sometimes they deſcended to ſome ſmall diſtance; and at others, amuſed themſelves with rolling large fragments of rocks down the precipice; and theſe frequently required the joint ſtrength of them all, though they often ſaw the ſame effected by the mere force of the wind. But they always took care in their excurſions not to go ſo far out, but that on the leaſt appearance of the clouds gathering about their cottage, which often happened very ſuddenly, they could regain their ſhelter. The door of their hut was faſtened with thongs of leather, and on the inſide not the ſmalleſt crevice was left unſtopped; beſides which, it was very compactly covered with ſtraw: but notwithſtanding all their care, the wind penetrated through. The days were often little better than the nights; and all the light they enjoyed was that of a lamp or two, which they kept continually burning.

Though their hut was ſmall, and crowded with inhabitants, beſides the heat of the lamps; yet the intenſeneſs of the cold was ſuch, that every one of them was obliged to have a chafing-diſh of coals. Theſe precautions would have rendered the rigour of the climate ſupportable, had not the imminent danger of periſhing by being blown down the precipice rouſed them, every time it ſnowed, to encounter the ſeverity of the outward air, and ſally out with ſhovels to free the roof of their hut from the maſſes of ſnow which were gathering on it. Nor would it, without this precaution, have been able to ſupport the weight. They were not indeed without ſervants and Indians; but theſe were ſo benumbed with the cold, that it was with great difficulty they could get them out of a ſmall tent, where they kept a continual fire. So that all our artiſts could obtain from them was to take their turns in this labour; and even then they went very unwillingly about it, and conſequently performed it ſlowly.

It may eaſily be conceived what this company ſuffered from the aſperities of ſuch a climate. Their feet were ſwelled, and ſo tender, that they could not even bear the heat; and walking was attended with extreme pain. Their hands were covered with chilblains; their lips ſwelled and chopped; ſo that every motion in ſpeaking, or the like, drew blood; conſequently they were obliged to ſtrict taciturnity, and little diſpoſed to laugh; as, by cauſing an extenſion of the lips, it produced ſuch fiſſures as were very painful for two or three days after.

Their common food in this inhoſpitable region was a little rice boiled with ſome fleſh or fowl procured from Quito; and, inſtead of fluid water, their pot was filled with ice. They had the ſame reſource with regard to what they drank: and while they were eating, every one was obliged to keep his plate over a chafing-diſh of coals, to prevent his proviſions from freezing. The ſame was done with regard to the water. At firſt they imagined the drinking ſtrong liquors would diffuſe a heat through the body, and conſequently render it leſs ſenſible of the painful ſharpneſs of the cold; but, to their ſurpriſe, they felt no manner of ſtrength in ſuch liquors, nor were they any greater preſervative againſt the cold than common water.

At the ſame time, they found it impoſſible to keep the Indians together. On their firſt feeling of the climate, their thoughts were immediately turned on deſerting their maſters. The firſt inſtance they had of this kind was ſo unexpected, that, had not one, of a better diſpoſition than the reſt, ſtaid and acquainted them of their deſign, it might have proved of very bad conſequence. The affair was this: There being on the top of the rock no room for pitching a tent for the Indians, they uſed every evening to retire to a cave at the foot of the mountain; where, beſides a natural diminution of the cold, they could keep a continual fire; and conſequently enjoyed more comfortable quarters than their maſters. Before they withdrew at night, they faſtened on the outſide the door of the hut, which was ſo low that it was impoſſible to go in or out without ſtooping; and as every night the hail and ſnow which had fallen formed a wall againſt the door, it was the buſineſs of one or two of the Indians to come early and remove this obſtruction. For though the negro ſervants were lodged in a little tent, their hands and feet were ſo covered with chilblains, that they would rather have ſuffered themſelves to have been killed than move. The Indians therefore came conſtantly up to deſpatch this work betwixt nine and ten in the morning: but they had not been there above four or five days, when they were not a little alarmed to ſee ten, eleven, and twelve o'clock come, without any news of their labourers; when they were relieved by the honeſt ſervant mentioned above, who had withſtood the ſeduction of his countrymen, and informed his maſters of the deſertion of the four others. As ſoon as the ſnow was cleared away from the door, they deſpatched the Indian to the corregidor of Quito, who with equal deſpatch ſent other Indians, threatening to chaſtiſe them ſeverely if they were wanting in their duty.

But the fear of puniſhment was not ſufficient to induce them to ſupport the rigour of this ſituation; for within two days they deſerted. The corregidor therefore, to prevent any other inconvenience, ſent four Indians under the care of an alcade, and gave orders for their being relieved every fourth day.

Twenty-three tedious days our artiſts ſpent on this rock, viz. to the 6th of September, and even without any poſſibility of finiſhing their obſervations of the angles: for when it was fair and clear weather with them, the others, on whoſe ſummits the ſignals which formed the triangles for meaſuring the degrees of the meridian, were hid in the clouds; and when thoſe were clear, Pichincha was involved in clouds. It was therefore neceſſary to erect their ſignals in a lower ſituation,

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Andes. and in a more favourable region. This, however, did not produce any change in their habitation till the beginning of December; when, having finiſhed the obſervations which particularly concerned Pichincha, they proceeded to others; but with no abatement either of inconveniences, cold, or fatigue; for the places where they made their obſervations being neceſſarily on the higheſt parts of the deſerts, the only reſpite in which they enjoyed ſome little eaſe was during the ſhort interval of paſſing from one to the other.

In all their ſtations ſubſequent to that on Pichincha, during their fatiguing menſuration of the degrees of the meridian, each company lodged in a field-tent, which, though ſmall, they found leſs inconvenient than the hut on Pichincha; though at the ſame time they had more trouble, being oftener obliged to clear it from the ſnow, as the weight of it would otherwiſe have demoliſhed the tent. At firſt, indeed, they pitched it in the moſt ſheltered places; but on taking a reſolution that the tents themſelves ſhould ſerve for ſignals, to prevent the inconvenience of having others of wood, they removed them to a more expoſed ſituation, where the impetuoſity of the winds ſometimes tore up the piquets, and blew them down.

Though this mountain is famous for its great height, it is conſiderably lower than the mountain of Cotopaxi: but it is impoſſible to conceive the coldneſs of the ſummit of the laſt mentioned mountain from that felt on this; ſince it muſt exceed every idea that can be formed by the human mind, though they are both ſeated in the midſt of the torrid zone. In all this range of mountains, there is ſaid to be a conſtant inferior boundary, beyond which the ſnow never melts: this boundary, in the midſt of the torrid zone, is ſaid by ſome to be 2434 fathoms above the level of the ſea; by others, only 2400 feet. The ſnow indeed falls much lower, but then it is ſubject to be melted the very ſame day. It is affirmed, that there are in the Andes 16 volcanoes or burning mountains, which throw out fire and ſmoke with a terrible noiſe. The height of Chimborazo, ſaid to be the higheſt peak of the Andes, has been determined by geometrical calculations to be 20,282 feet. But the great differences between the calculators of the height of mountains in other parts of the world, muſt very much diminiſh the credit of ſuch calculations. Inſtances of this we have already given under the article ÆTNA. No leſs remarkable are the differences concerning the height of the Peak of Teneriffe; which, according to the calculations of Varenius, is three miles and three quarters, or 19,800 feet; and according to thoſe of Dr Heberden, it is only 15,396 feet; and according to thoſe of M. Feuille, is no more than 13,128 feet. From theſe ſpecimens, we can ſcarce avoid concluding, that all the methods hitherto invented for calculating the exact height of mountains are inſufficient.

As all or moſt rivers have their ſource in mountains, it is no wonder a great number run down the ſides of the Andes. Some hurry along with a prodigious rapidity; while others form beautiful caſcades, or run through holes in rocks, which look like bridges of a ſtupendous height. There is a public road through the mountains, 1020 miles in length, part of which runs from Quito to Cuſco.

ANDES, a hamlet of Mantua in Italy, the birthplace of Virgil. Hence the epithet *Andinus* (Ovid. Trift.). Now called *Pietola*, two miles to the weſt of Mantua.

ANDETRIUM; ANDETRIUM (Strabo): ANDRETRIUM, or ANDRECTIUM (Ptolemy): An inland town of Dalmatia. The genuine name is *Andetrium* (Inſcription). It is deſcribed as ſituated near [illegible] a naturally ſtrong and inacceſſible rock, [illegible] with deep valleys, with rapid torrents; from which it appears to be the citadel now called *Cliſſa*. E. Long. 17. 46. N. Lat. 43. 10.

ANDEUSE, a city of Languedoc in France, ſituated in E. Long. 3. 40. and N. Lat. 43. 45.

ANDOMADUNUM; ANDOMATUNUM (Ptolemy); and ANTEMATUNUM (Antonine); CIVITAS LINGONUM (Tacitus): A city of Gallia Belgica; now *Langres* in Champagne, ſituated on a rock (which ſeems to juſtify the termination *dunum*), on the borders of Burgundy, at the ſprings of the Marne. Tacitus calls an inhabitant *Lingon*. E. Long. 5. 22. N. Lat. 48. 0.

ANDOVER, a large market town in Hampſhire, which is ſituated on a branch of the river Teſt. It has ſeveral inns, which afford good accommodation for travellers; and has a market on Saturday, well ſtocked with proviſions. It is governed by a bailiff, a ſteward, a recorder, ten approved men, and twenty-two capital burgeſſes, who yearly chooſe the bailiff, and he elects two ſerjeants at mace to attend him. The living is a vicarage valued at 171l. 4s. 4d. in the king's books. W. Long. 0. 56. N. Lat. 51. 20.

ANDRACHNE, BASTARD ORPINE. See BOTANY *Index*.

ANDRADA, DIEGO DE PAYVA D', or ANDRADIUS, a learned Portugueſe, born at Coimbra, who diſtinguiſhed himſelf at the council of Trent, where King Sebaſtian ſent him as one of his divines. There is ſcarce any Catholic author who has been more quoted by the Proteſtants than he, becauſe he maintained ſome opinions a little extravagant concerning the ſalvation of the Heathens. Andrada was eſteemed an excellent preacher. His ſermons were publiſhed in three parts, the ſecond of which was tranſlated into Spaniſh by Benedict de Alcoran. Many encomiums have been beſtowed upon Andrada. Oſorius in his preface to the "Orthodox Explanations of Andradius," gives him the character of a man of wit, vaſt application, great knowledge in the languages, with all the zeal and eloquence neceſſary to a good preacher; and Roſweidus ſays, that he brought to the council of Trent the underſtanding of a moſt profound divine, and the eloquence of a conſummate orator.

ANDRAPODISMUS, in ancient writers, the ſelling of perſons for ſlaves. Hence alſo *andrapodiſta*, a dealer in ſlaves, more particularly a kidnapper, who ſteals men or children to ſell them; a crime for which the Theſſalians were noted.

ANDRAPODOCAPELI, in antiquity, a kind of dealers in ſlaves. The *Andrapodocapeli* had a particular proceſs for taking off moles and the like diſfigurements on the faces of the ſlaves they kept for ſale, by rubbing them with bran. At Athens, ſeveral places in the forum were appointed for the ſale of ſlaves. Upon the firſt day of every month, the merchants called

Andrea, Andreas.

ed Ανδραποδοκαπηλοι brought them into the market, and exposed them to sale; the crier standing upon a stone erected for that purpose, called the people together.

ANDREA, St, a small village on the Malabar coast in the East Indies, founded originally by the Portuguese. It takes its name from a church dedicated to St Andrew, and served by the priests of St Thomas.—On the shore of St Andrea, about half a league out in the sea, lies Mud-bay, a place which few in the world can parallel. It is open to the wide ocean, and has neither island nor bank to break the force of the billows, which come rolling with great violence from all parts, in the south-west monsoons: but on this bank of mud they lose themselves in a moment; and ships lie on it as secure as in the best harbour, without motion or disturbance. It reaches about a mile along shore, and has been observed to shift its place from the northward about three miles in 30 years. From St Andrea to Kranganor, about 12 leagues to the south, the water has the bad property of causing swellings in the legs of those who drink it constantly. Some it affects in one leg, and some in both. It causes no pain, but itching; nor does the swelled leg seem heavier to the owner than the small one, though some have been seen a yard in circumference at the ancle. The Romish legends impute the cause of this distemper (for which no preventive or cure hath been hitherto found) to a curse laid by St Thomas upon his murderers and their posterity; though, according to the Romans themselves, St Thomas was killed by the Tillinga priests at Meliaphur, on the coast of Coromandel, about 400 miles distant, and where the natives have not this distemper.

ANDREAS, John, a celebrated canonist in the 14th century, was born at Mugello, near Florence; and was professor of canon law at Padua, Pisa, and afterwards at Bologna. It is said that he macerated his body with fasting: and lay upon the bare ground every night for 20 years together, covered only with the skin of a bear. This is attested by very good authors; but if the story which Poggius tells of him in his jests be true, he must afterwards have relaxed much of this continency: "Joannem Andream (says he), doctorem Bonnonienſem, cujus fama admodum vulgata est, subagitantem ancillam domesticam uxor deprehendit: re insueta stupefacta mulier in virum versa, Ubi nunc, ait, Joannes, est sapientia vestra? Ille nil amplius locutus, In vulva istius, respondit, loco admodum sapientiæ accommodato." The French translation of this perhaps will not be displeasing.

Jean, dit André, fameux Docteur des Loix,
Fut pris un jour au péché d'amourette:
Il acolloit une jeune soubrette.
Sa femme vint, fit un signe de croix.
Ho ho, dit elle, est ce vous? non je pense:
Vous dont par-tout en vante la prudence.
Qu'est devenu cet esprit si subtil?
Le bon André, poursuivant son négoce,
Honteux pourtant, ma foi, repondit-il,
Prudence, esprit, tout gît dans cette fosse.

Since it is agreed that John Andreas had a bastard, this story is at the bottom very probable; and it was perhaps with the mother of Banicontius that his wife found him. Andreas had a beautiful daughter, named *Novella*, whom he loved extremely: and he is said to have instructed her so well in all parts of learning, that when he was engaged in any affair which hindered him from reading lectures to his scholars, he sent his daughter in his room; and lest her beauty should prevent the attention of the hearers, she had a little curtain drawn before her. To perpetuate the memory of this daughter, he entitled his commentary upon the Decretals of Gregory IX. the *Novellæ*. He married her to John Calderinus, a learned canonist. The first work of Andreas was his Gloss upon the Sixth Book of the Decretals, which he wrote when he was very young. He wrote also Glosses upon the Clementines; and a Commentary *in regula Sexti*, which he entitled *Mercuriales*, because he either engaged in it on Wednesdays (*diebus Mercurii*), or because he inserted his Wednesdays disputes in it. He enlarged the Speculum of Durant, in the year 1347. This is all which Mr Bayle mentions of his writings, though he wrote many more. Andreas died of the plague at Bologna in 1348, after he had been a professor 45 years; and was buried in the church of the Dominicans. Many eulogiums have been bestowed upon him. He has been called *Archidoctor decretorum*: In his epitaph, *Rabbi doctorum; lux, censor, normaque morum;* "Rabbi of the doctors, the light, censor, and rule of manners:" And it is said, that Pope Boniface called him *lumen mundi*, "the light of the world."

Andreas.

ANDREAS, *John*, was born a Mahometan, at Xativa in the kingdom of Valencia, and succeeded his father in the dignity of alfaqui of that city. He was enlightened with the knowledge of the Christian religion by being present at a sermon in the great church of Valencia on the day of Assumption of the Blessed Virgin, in the year 1487. Upon this he desired to be baptized; and, in memory of the calling of St John and St Andrew, he received the name John Andreas. "Having received holy orders (says he), and from an alfaqui and a slave of Lucifer, become a priest and minister of Christ; I began, like St Paul, to preach and publish the contrary of what I had erroneously believed and asserted; and, with the assistance of Almighty God, I converted at first a great many souls of the Moors, who were in danger of hell, and under the dominion of Lucifer, and conducted them into the way of salvation. After this, I was sent for by the most catholic princes King Ferdinand and Queen Isabella, in order to preach in Grenada to the Moors of that kingdom, which their majesties had conquered: by God's blessing on my preaching, an infinite number of Moors were brought to abjure Mahomet, and to turn to Christ. A little after this, I was made a canon by their grace; and sent for again by the most Christian Queen Isabella to Arragon, that I might be employed in the conversion of the Moors of those kingdoms, who still persisted in their errors, to the great contempt and dishonour of our crucified Saviour, and the prodigious loss and danger of all Christian princes. But this excellent and pious design of her majesty was rendered ineffectual by her death." At the desire of Martin Garcia, bishop of Barcelona, he undertook to translate from the Arabic, into the language of Arragon, the whole law of the Moors; and after having finished this undertaking, he composed his famous work of *The Confusion of the Sect of Mahumed;* it contains twelve chapters,

Andreini
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Andrew.

chapters, wherein he has collected the fabulous ſtories, impoſtures, forgeries, brutalities, follies, obſcenities, abſurdities, impoſſibilities, lies, and contradictions, which Mahomet, in order to deceive the ſimple people, has diſperſed in the writings of that kind, and eſpecially in the Alcoran, which, as he ſays, was revealed to him in one night by an angel, in the city of Meke; though in another place he contradicts himſelf, and aſſums that he was 20 years in compoſing it. Andreas tells us, he wrote this work, that not only the learned amongſt Chriſtians, but even the common people, might know the different belief and doctrine of the Moors; and on the one hand might laugh and ridicule ſuch inſolent and brutal notions, and on the other might lament their blindneſs and dangerous condition. This book, which was publiſhed at firſt in Spaniſh, has been tranſlated into ſeveral languages; all thoſe who write againſt the Mahometans quote it very much.

ANDREINI, Isabella, a native of Padua, was an excellent poeteſs, and one of the beſt comedians in Italy, towards the beginning of the 17th century. The Intenti of Pavia thought they did their ſociety an honour by admitting her a member of it; and ſhe, in acknowledgment of this honour, never forgot to mention amongſt her titles that of *Academica Infanta*; her titles were theſe, "Iſabella Andreini, comica geloſa, academica infanta, detta l'acceſſa." She was alſo a woman of extraordinary beauty: which, added to a fine voice, made her charm both the eyes and ears of the audience. She died of a miſcarriage, at Lyons, the 10th of June 1604, in the 42d year of her age. Her death being a matter of general concern and lamentation, there were many Latin and Italian elegies printed to her memory: ſeveral of theſe pieces were placed before her poems in the edition of Milan, in 1605. Beſides her ſonnets, madrigals, ſongs, and eclogues, there is a paſtoral of hers entitled Myrtilla, and letters, printed at Venice in 1610. She ſung extremely well, played admirably on ſeveral inſtruments, underſtood the French and Spaniſh languages, and was not unacquainted with philoſophy.

ANDRELINUS, Publius Faustus, born at Forli in Italy. He was long time profeſſor of poetry and philoſophy in the univerſity of Paris. Louis XII. of France made him his poet laureat; and Eraſmus tells us he was likewiſe poet to the queen. His pen was not wholly employed in making verſes; for he wrote alſo moral and proverbial letters in proſe, which were printed ſeveral times. His poems, which are chiefly in Latin, are inſerted in vol. i. of the *Delicæ Poetarum Italorum*. M. de la Monnoie tells us, "that Andrelinus, when he was but 22 years old, received the crown of laurel: That his love verſes, divided into four books, entitled *Livia*, from the name of his miſtreſs, were eſteemed ſo fine by the Roman Academy, that they adjudged the prize of the Latin elegy to the author." He died in 1518. This author's manner of life was not very exemplary; yet he was ſo fortunate, ſays Eraſmus, that though he took the liberty of rallying the divines, he was never brought into trouble about it.

ANDREW, St, the apoſtle, born at Bethſaida in Galilee, brother to Simon Peter. He had been a diſciple of John the Baptiſt, and followed Jeſus upon the teſtimony given of him by the Baptiſt (John i. 30, 37, &c.) He followed our Saviour with another of John's diſciples, and went into the houſe where [illegible]; here he continued from about four o'clock in the afternoon till it was night. This was the firſt diſciple whom our Saviour received into his train. Andrew introduced his brother Simon, and they paſſed a day with Chriſt, after which they went to the marriage in Cana (*id.* ii.), and at laſt returned to their ordinary occupation. Some months after, Jeſus meeting them while they were both fiſhing together, called them to him, and promiſed to make them fiſhers of men. Immediately they left their nets, followed him (Mat. iv. 19.), and never afterwards ſeparated from him.

After our Saviour's aſcention, the apoſtles having determined by lot what parts of the world they ſhould ſeverally take, Scythia and the neighbouring countries fell to St Andrew, who, according to Euſebius, after he had planted the goſpel in ſeveral places, came to Patræ in Achaia, where, endeavouring to convert the proconſul Ægeas, he was by that governor's orders ſcourged, and then crucified. The particular time of his ſuffering martyrdom is not known; but all the ancient and modern martyrologies, both of the Greeks and Latins, agree in celebrating his feſtival upon the 30th of November. His body was embalmed, and decently interred at Patræ by Maximilla, a lady of great quality and eſtate. Afterwards it was removed to Conſtantinople by Conſtantine the Great, and buried in the great church, which he had built to the honour of the apoſtles. There is a croſs to be ſeen at this day in the church of St Victor at Marſeilles, which is believed by the Romaniſts to be the ſame that St Andrew was faſtened to. It is in the ſhape of the letter X, and is encloſed in a ſilver ſhrine. Peter Chryſologus ſays, that he was crucified upon a tree; and the ſpurious Hippolytus aſſures us it was an olive tree.

Andrew, or *Knights of St Andrew*, an order of knights, more uſually called the order of the thiſtle. See Thistle.

Knights of St Andrew, is alſo an order inſtituted by Peter the Great of Muſcovy in 1698; the badge of which is a golden medal; on one ſide whereof is repreſented St Andrew's croſs, with theſe words, *Czar Pierre monarque de tout le Ruſſie*. This medal, being faſtened to a blue ribbon, is ſuſpended from the right ſhoulder.

St Andrew's Croſs, one in form of the letter X. See Cross.

St Andrew's Day, a feſtival of the Chriſtian church, celebrated on the 30th of November, in honour of the apoſtle St Andrew.

ANDREW'S, St, a town of Fifeſhire in Scotland, once the metropolis of the Pictiſh kingdom, lying in W. Long. 2. 25. N. Lat. 56. 18. If we may credit legend, St Andrew's owes its origin to a ſingular accident. St Regulus (or *Rule*, as he is likewiſe called), a Greek of Achaia, was warned by a viſion to leave his native country, and viſit Albion, an iſle placed in the remoteſt part of the world; and to take with him the arm-bone, three fingers, and three toes, of St Andrew. He obeyed, and ſet ſail with his companions, but had a very tempeſtuous paſſage. After being toſſed for ſome time on a ſtormy ſea, he was at laſt ſhipwrecked on the coaſt of Otholania, in the territories of Herguſtus king of the Picts, in the year 370. On hear-

Andrew's. ing of the arrival of the ſtrangers, with their precious relics, the king immediately gave orders for their reception, afterwards preſenting the ſaint with his own palace, and building near it the church, which ſtill bears the name of *St Regulus*.

At this time the place was ſtyled *Mucroſs*, or the *land of boars*: all round was foreſt, and the lands beſtowed on the ſaint were called *Eyrehid*. The boars equalled in ſize the ancient Erymanthian; as a proof of which, two tuſks, each ſixteen inches long and four thick, were chained to the altar of St Andrew's. St Regulus changed the name to *Kilrymont*; and eſtabliſhed here the firſt Chriſtian prieſts of the country, called *Culdees*. The church was ſupreme in the kingdom of the Picts; Ungus having granted to God and St Andrew, that it ſhould be the head and mother of all the churches in his dominion. He alſo directed that the croſs of St Andrew ſhould become the badge of the country. In 518, after the conqueſt of the Picts, he removed the epiſcopal ſee to St Andrew's, and the biſhop was ſtyled *maximus Scotorum epiſcopus*. In 1441, it was erected into an archbiſhopric by Sextus IV. at the interceſſion of James III. In 1606, the priory was ſuppreſſed; and, in 1617, the power of election was transferred to eight biſhops, the principal of St Leonard's college, the archdeacon, the vicars of St Andrew's, Leuchars, and Cupar. This ſee contained the greateſt part of the ſhire of Fife, with a part of Perth, Forfar, and Kincardine ſhires, and a great number of pariſhes, churches, and chapels in other dioceſes.

The town of St Andrew's was erected into a royal borough by David I. in the year 1140, and its privileges afterwards confirmed. The charter of Malcolm II. is preſerved in the tolbooth; and appears written on a bit of parchment, but the contents equally valid with what would at this time require whole ſkins. Here alſo are kept the ſilver keys of the city; which, for form's ſake, are delivered to the king, if he ſhould viſit the place, or to a victorious enemy, in token of ſubmiſſion. In this place, likewiſe, is to be ſeen the monſtrous axe which, in 1646, took off the heads of Sir Robert Spotſwood and other diſtinguiſhed loyaliſts. The town underwent a ſiege in 1337; at which time it was poſſeſſed by the Engliſh and other partizans of Baliol; but the loyaliſts, under the earls of March and Fife, made themſelves maſters of it in three weeks, by the help of their battering machines.

St Andrew's is now greatly reduced in the number of its inhabitants; at preſent ſcarcely exceeding 2000. It is impoſſible to aſcertain the ſum when it was the ſeat of the primate: all that can be known is, that during the period of its ſplendour, there were between ſixty and ſeventy bakers; but now nine or ten are ſufficient for the place. It is a mile in circuit, and contains three principal ſtreets. On entering the weſt port, a well built ſtreet, ſtraight, and of a vaſt length and breadth appears; but ſo grass-grown, and preſenting ſuch a dreary ſolitude, that it forms the perfect idea of having been laid waſte by the peſtilence.

The cathedral of St Andrew's was founded by Biſhop Arnold in 1161, but did not attain its full magnificence till 1318. Its length from eaſt to weſt was 370 feet; that of the tranſept, 322. But though this vaſt pile was 157 years in building, John Knox, in June 1559, effected its demolition in a ſingle day; and ſo effectually has it been deſtroyed, that nothing now Andrew's. remains but part of the eaſt and weſt ends, and of the ſouth ſide.

Near the eaſt end is the chapel of St Regulus; the tower of which is a lofty equilateral triangle, of 20 feet each ſide, and 103 feet high; the body of the chapel remains, but the two ſide chapels are ruined. The arches of the windows and doors are round, and ſome even more than ſemicircles; an undoubted proof of their antiquity.

The priory was founded by Alexander I. in 1122; and the monks (canons regular of St Auguſtine) were brought from Scone in 1140, by Robert biſhop of this ſee. By an act of parliament, in the time of James I. the prior had precedence of all abbots and priors, and on the days of feſtival wore a mitre and all epiſcopal ornaments. Dependent on this priory were thoſe of Lochleven, Portmoak, Monimuſk, the Iſle of May, and Pittenweem, each originally a ſeat of the Culdees. The revenues of the houſe were vaſt, viz. In money 2237l. 2s. 10½d.; 38 chalders 1 boll 3 firlots of wheat; 132 ch. 7 bolls of bear; 114 ch. 3 bolls 1 peck of meal; 151 ch. 10 bolls 1 firlot 1 peck and a half of oats; 3 ch. 7 bolls of peaſe and beans: 480 acres of land alſo belonged to it. Nothing remains of the priory except the walls of the precinct, which ſhow its vaſt extent. In one part is a moſt artleſs gateway, formed only of ſeven ſtones. This encloſure begins near the cathedral, and extends to the ſhore.

The other religious houſes were, one of Dominicans founded in 1274, by Biſhop Wiſhart; another of Obſervantines, founded by Biſhop Kennedy, and finiſhed by his ſucceſſor Patrick Graham in 1478: and, according to ſome, the Carmelites had a fourth.

Immediately above the harbour ſtood the collegiate church of Kirk-heugh, originally founded by Conſtantine III. who, retiring from the world, became here a Culdee. From its having been firſt built on a rock, it was ſtyled, *Præpoſitura Sanctæ Mariæ de rupe*.

On the eaſt ſide of the city are the poor remains of the caſtle, on a rock overlooking the ſea. This fortreſs was founded in 1401, by Biſhop Trail, who was buried near the high altar of the cathedral, with this ſingular epitaph:

Hic fuit eccleſiæ directa columna, feneſtra
Lucida, thuribulum redolens, campana ſonora.

The caſtle was the reſidence of Cardinal Beaton; who, after the death of George Wiſhart, apprehending ſome danger, cauſed it to be fortified ſo ſtrongly as to be at that time deemed impregnable. In this fortreſs, however, he was ſurpriſed and aſſaſſinated by Norman Leſly with 15 others. They ſeized on the gate of the caſtle early in the morning of May 29. 1546; it having been left open for the workmen who were finiſhing the fortifications: and having placed ſentinels at the door of the cardinal's apartment, they awakened his numerous domeſtics one by one; and, turning them out of the caſtle, they, without violence, tumult, or offering an injury to any other perſon, inflicted on Beaton the death he juſtly merited. The conſpirators were immediately beſieged in this caſtle by the regent, earl of Arran; and notwithſtanding they had acquired no greater ſtrength than 150 men, they reſiſted all his efforts for five months. This, however, was owing to the

Andrew's the unſkilfulneſs of the beſiegers more than to the ſtrength of the place or the valour of the beſieged; for in 1547 the caſtle was reduced and demoliſhed. The entrance of it is ſtill to be ſeen; and the window is ſhown, out of which it is ſaid the cardinal leaned to glut his eyes with the cruel martyrdom of George Wiſhart, who was burnt on a ſpot beneath.

In the church of St Salvator is a moſt beautiful tomb of Biſhop Kennedy, who died, an honour to his family, in 1466. The Gothic work is uncommonly elegant. Within the tomb were diſcovered ſix magnificent maces, which had been concealed here in troubleſome times. One was given to each of the other three Scotch univerſities, and three are preſerved here. In the top is repreſented our Saviour; around are angels, with the inſtruments of the paſſion.

With theſe are ſhown ſome ſilver arrows, with large ſilver plates affixed to them, on which are inſcribed the arms and names of the noble youth, victors in the annual competitions in the generous art of archery, which were dropt but a few years ago; and golf is now the reigning game. That ſport, and foot-ball, were formerly prohibited, as uſeleſs and unprofitable to the public; and at all *weapon ſchawings*, or reviews of the people, it was ordered, that *fute-ball and golfe be utterly cryed down, and that bowe-markes be made at ilk pariſh kirk, a pair of butts and ſchutting be uſed; and that ilk man ſchutte ſex ſchottes at leaſt, under the paine to be raiped upon them that cummes not, at leaſt twa pennyes to be given to them that cummis to the bow-markes to drink*.

The celebrated univerſity of this city was founded in 1411, by Biſhop Wardlaw. It conſiſted once of three colleges. 1. St Salvator's, founded in 1458, by Biſhop Kennedy. This is a handſome building, with a court or quadrangle within: on one ſide is the church, on another the library; the third contains apartments for ſtudents: the fourth is unfiniſhed. 2. St Leonard's college was founded by Prior Hepburn, in 1522. This is now united with the laſt, and the buildings ſold, and converted into private houſes. 3. The new, or St Mary's college, was eſtabliſhed by Archbiſhop Hamilton in 1553; but the houſe was built by James and David Bethune, or Beaton, who did not live to complete it. This is ſaid to have been the ſite of a *ſchola illuſtris* long before the eſtabliſhment even of the univerſity, where ſeveral eminent clergymen taught, gratis, the ſciences and languages. But it was called the *new college*, becauſe of its late erection into a divinity college by the archbiſhop.

The univerſity is governed by a chancellor, an office originally deſigned to be perpetually veſted in the archbiſhop of St Andrew's; but ſince the Reformation, he is elected by the two principals, and the profeſſors of both the colleges.

The rector is the next great officer; to whoſe care are committed the privileges, diſcipline, and ſtatutes of the univerſity. The colleges have their rectors, and profeſſors of different ſciences, who are indefatigable in their attention to the inſtruction of the ſtudents, and to that eſſential article their morals. This place poſſeſſes ſeveral very great advantages reſpecting the education of youth. The air is pure and ſalubrious; the place for exerciſe, dry and extenſive: the exerciſes themſelves are healthy and innocent. The univerſity is fixed in a peninſulated country; remote from all commerce with the world, the haunt of diſſipation. From the ſmallneſs of the ſociety, every ſtudent's character is perfectly known. No little irregularity can be committed, but it is inſtantly diſcovered and checked: vice cannot attain a head in this place, for the incorrigible are never permitted to remain the corrupters of the reſt.

The trade of St Andrew's was once very conſiderable. So late as the reign of Charles I. this place had thirty or forty trading veſſels, and carried on a conſiderable herring and white fiſhery, by means of buſſes, in deep water; which fiſheries had for ages been the grand ſource of their commerce, wealth, and ſplendour. After the death of the king, this whole coaſt, and St Andrew's in particular, became a ſcene of murder, plunder, and rapine: every town ſuffered in proportion to its magnitude and opulence. Nor were thoſe hypocritical ruffians ſatisfied with the ſhipping, merchandiſe, plate, cattle, and whatever came within their ſight; they alſo laid the whole coaſt under contribution. St Andrew's was required to pay 10000l.; but the inhabitants not being able to raiſe that ſum after being thus plundered, the general compounded for 500l. which was raiſed by a loan at intereſt, and hath remained a burden upon the corporation, it is believed, ever ſince.

The harbour is artificial, guarded by piers, with a narrow entrance, to give ſhelter to veſſels from the violence of a very heavy ſea, by the encroachments of which it has ſuffered much. The manufactures this city might in former times poſſeſs, are now reduced to one, that of golf balls; which, trifling as it may ſeem, maintains a great number of people. It is, however, commonly fatal to the artiſts; for the balls are made by ſtuffing a great quantity of feathers into a leathern caſe, by help of an iron rod, with a wooden handle, preſſed againſt the breaſt, which ſeldom fails to bring on a conſumption.

Andrews, *Lancelot*, biſhop of Winchеſter, was born at London in 1555, and educated at Cambridge. After ſeveral preferments, he was made biſhop, firſt of Chicheſter, then of Ely, and, in 1618, was raiſed to the ſee of Winchеſter. This very learned prelate, who was diſtinguiſhed by his piety, charity, and integrity, may be juſtly ranked with the beſt preachers and compleateſt ſcholars of his age; he appeared to much greater advantage in the pulpit than he does now in his works, which abound with Latin quotations and trivial witticiſms. His ſermons, though full of puns, were ſuited to the taſte of the times in which he lived, and were conſequently greatly admired. He was a man of polite manners and lively converſation: and could quote Greek and Latin authors, or even pun, with King James. There is a pleaſant ſtory related of him in the life of Waller the poet. When that gentleman was young, he had the curioſity to go to court, and ſtood in the circle to ſee King James dine; where, among other company, there ſat at table two biſhops, Neale and Andrews. The king propoſed aloud this queſtion, Whether he might not take his ſubjects money when he needed it, without all this formality of parliament? Neale replied, "God forbid you ſhould not; for you are the breath of our noſtrils." Whereupon the king turned, and ſaid to the biſhop of Winchеſter, "Well, my lord, what

Andrews || Androgeus.

ſay you?" "Sir (replied the biſhop), I have no ſkill to judge of parliamentary caſes." The king anſwered, "No put-offs, my lord; anſwer me preſently." "Then, Sir (ſaid he), I think it lawful for you to take my brother Neale's money, for he offers it." Mr Waller ſays, the company was pleaſed with this anſwer, but the wit of it ſeemed to affect the king; for a certain lord coming ſoon after, his majeſty cried out, "O, my lord, they ſay you lig with my lady." "No, Sir (ſays his lordſhip, in confuſion), but I like her company becauſe ſhe has ſo much wit." "Why then (ſays the king) do not you lig with my lord of Wincheſter there?" This great prelate was in no leſs reputation and eſteem with King Charles I. than he had been with his predeceſſors. He died at Wincheſter houſe in Southwark, September 27. 1626, in the 71ſt year of his age; and was buried in the pariſh church of St Saviour's, where his executors erected to him a very fair monument of marble and alabaſter, on which is an elegant inſcription, in Latin, written by one of his chaplains. Mr Milton alſo, at 17 years of age, wrote a beautiful elegy on his death, in the ſame language. Biſhop Andrews had, 1. A ſhare in the tranſlation of the Pentateuch, and the hiſtorical books from Joſhua to the firſt book of Chronicles excluſively. He alſo wrote, 2. *Tortura Torti*, in anſwer to a work of Cardinal Bellarmine, in which that cardinal aſſumes the name of *Matthew Tortus*. 3. A Manual of Private Devotions; and, 4. A Manual of Directions for the Viſitation of the Sick; beſides the Sermons and Tracts, in Engliſh and Latin, publiſhed after his death.

ANDRIA, in Grecian antiquity, public entertainments firſt inſtituted by Minos of Crete, and, after his example, appointed by Lycurgus at Sparta, at which a whole city or a tribe aſſiſted. They were managed with the utmoſt frugality; and perſons of all ages were admitted, the younger ſort being obliged by the lawgiver to repair thither as to ſchools of temperance and ſobriety.

ANDRIA, a city and a biſhop's ſee in the territory of Bari, in the kingdom of Naples. It is pretty large, well peopled, and ſeated in a ſpacious plain, four miles from the Adriatic coaſt. E. Long. 17. 4. N. Lat. 41. 15.

ANDRISCUS, a man of mean extraction, who, pretending to be the ſon of Perſeus laſt king of Macedonia, took upon him the name of *Philip*, for which reaſon he was called *Pſeudo-Philippus*, the *Falſe Philip*. After a complete victory over Juventius, the Roman prætor ſent againſt him, he aſſumed kingly power, but exerciſed it with vaſt cruelty. At laſt, the Romans obliged him to fly into Thrace, where he was betrayed and delivered into the hands of Metellus. This victory gained Macedonia once more into the power of the Romans, and to Metellus the name of *Macedonicus*, but coſt the Romans 25,000 men. Andriſcus adorned the triumph of Metellus, walking in chains before the general's chariot.

ANDROAS, or ANDRODAMAS, among ancient naturaliſts, a kind of pyrites, to which they attributed certain magical virtues.

ANDROGEUS, in fabulous hiſtory, the ſon of Minos king of Crete, was murdered by the Athenian youth and thoſe of Megara, who envied his being always victorious at the Attic games. But Minos having taken Athens and Megara, obliged the inhabitants to ſend him an annual tribute of ſeven young men and as many virgins, to be devoured by the Minotaur; but Theſeus delivered them from that tribute. Androgynes.

ANDROGYNES, in *Natural Hiſtory*, a name given to thoſe living creatures which, by a monſtrous formation of their generative parts, ſeem (for it is only ſeeming) to unite in themſelves the two ſexes, that of the male and of the female. This *luſus naturæ*, this defect, or perhaps redundancy, in the animal ſtructure, is deſcribed by medical authors in the following manner: "There is a depravation in the ſtructure of the parts intended by nature for propagation, when, beſides thoſe concealed parts that are found neceſſary for the diſcharge of prolific functions, the *pudenda* of the other ſex likewiſe appear. This monſtrous production of nature is diverſified in four different ways; of which three appear in males and one in females. In men, the female pudendum, clothed with hair, ſometimes appears contiguous to the perinæum; at other times, in the middle of the ſcrotum; at other times, which conſtitutes the third diverſity, through that part itſelf which in the midſt of the ſcrotum exhibits the form of a pudendum, urine is emitted. Near that part which is the teſt of puberty, and above the pudendum, even in females, the maſculine genitals appear in ſome, conſpicuous in all their three forms, one reſembling the *veretrum* or yard, the other like the two teſticles: but for the moſt part it happens, that, of the two inſtruments of generation, one is feeble and inert; and it is extremely rare that both are found ſufficiently valid and proper for feats of love; nay, even in a great many, both theſe members are deficient and impotent, ſo that they can perform the office neither of a male nor of a female."

With reſpect to them, it appears, from a collation of all the circumſtances which have been obſerved by naturaliſts worthy of credit, that there is no ſuch thing as a perfect *androgyne*, or real hermaphrodite; that is to ſay, a living creature, which, by its unnatural, or rather preternatural ſtructure, poſſeſſes the genuine powers of both ſexes, in ſuch a manner as to be qualified for performing the functions of either with ſucceſs: the irregularity of their fabrication almoſt always conſiſts in ſomething ſuperfluous added to one of the two ſexes, which gives it the appearance of the other, without beſtowing the real and characteriſtical diſtinction; and every *hermaphrodite* is almoſt always a very woman. Since this monſtrous exhibition of nature is not ſuch as to abrogate the rights or deſtroy the character of humanity amongſt human beings, this involuntary misfortune implies no right to deprive thoſe upon whom it is inflicted by nature of the privileges natural to every citizen; and as this deficiency is no more infectious than any other corporeal mutilation, it is not eaſy to ſee why marriage ſhould be prohibited to one of theſe unhappy beings, merely on account of its equivocal appearance, which acts in the character of its prevailing ſex. If ſuch a creature, by the defect of its conſtruction, ſhould be barren, this does not infer any right of diſſolving the marriage which it may have contracted, more than the ſame ſterility proceeding from any cauſe whether known or unknown, if his or her conſort ſhould not on that account require a divorce.

It

Andro-gynes.

It is only the licentious abuſe either of one or the other ſex which can be ſubjected to the animadverſion of the police. See HERMAPHRODITE.

Such are the ſentiments of the authors of the French Encyclopédie. After all, we cannot forbear to add that from ſuch heterogeneous matches nature ſeems to recoil with innate and inextinguiſhable horror. Nor are any of theſe invincible averſions implanted in our frame without a final cauſe worthy of its Author. We would gladly aſk theſe free-thinking gentlemen, In caſes where the ſexes are ſo unnaturally confounded, how the police can, by its moſt ſevere and rigorous animadverſions, either detect or prevent thoſe licentious abuſes againſt which they remonſtrate? Since, therefore, an evil ſo baneful to human ſociety could no otherwiſe be prevented than by the ſanction of Nature againſt ſuch horrible conjunctions, the inſtinctive antipathy which they inſpire was highly worthy of her wiſdom and purity.

ANDROGYNES, in *Ancient Mythology*, creatures of whom according to the fable, each individual poſſeſſed the powers and characters of both ſexes, having two heads, four arms, and two feet. The word itſelf is compounded of two Greek radical words; ἀνὴρ, in genitive ἀνδρὸς, a *male*; and γυνὴ, a *female*. Many of the rabbinical writers pretend, that Adam was created double, one body being male, the other female, which in their origin not being eſſentially joined, God afterwards did nothing but ſeparate them.

The gods, ſays Plato in his *Banquet*, had formed the ſtructure of man round, with two bodies and two ſexes. This fantaſtic being, poſſeſſing in itſelf the whole human ſyſtem, was endowed with a gigantic force, which rendered it inſolent, inſomuch that it reſolved to make war againſt the gods. Jupiter, exaſperated, was going to deſtroy it; but, ſorry at the ſame time to annihilate the human race, he ſatisfied himſelf with debilitating this double being, by diſjoining the male from the female, and leaving each half to ſubſiſt with its own powers alone. He aſſigned to Apollo the taſk of repoliſhing theſe two half bodies, and of extending their ſkins ſo that the whole ſurface might be covered. Apollo obeyed, and faſtened it at the *umbilicus*: If this half ſhould ſtill rebel, it was once more to be ſubdivided by another ſection, which would only leave it one of the parts of which it was then conſtituted; and even this fourth of a man was to be annihilated, if it ſhould perſiſt in its obſtinacy and miſchief. The idea of theſe *androgynes* might well be borrowed from a paſſage in Moſes, where that hiſtorian of the birth and infancy of nature, deſcribes Adam as calling Eve *bone of his bone* and *flesh of his fleſh*. However this may be, the fable of Plato has been uſed with great ingenuity by a French poet, who has been rendered almoſt as conſpicuous by his misfortunes as by his verſes. With the ancient philoſopher, he attributes the propenſity which attracts one of the ſexes towards the other, to the natural ardour which each half of the *androgynes* feels for reunion; and their inconſtancy, to the difficulty which each of the ſeparated parts encounters in its efforts to recover its proper and original half. If a woman appears to us amiable, we inſtantly imagine her to be that moiety with whom we ſhould only have conſtituted one whole, had it not been for the inſolence of our original double-ſexed proprietor:

> The heart, with fond delight ſurpriſed,
> Tells us the half is found, and all our toil;
> But 'tis our curſe, that ſelf-deceiving ever,
> We neither find our half, nor gain repoſe.

ANDROGYNOUS, in *Zoology*, an epithet given to animals which have both the male and female ſex in the ſame individual.—In *Botany*, the term is applied to ſuch plants as bear both male and female flowers on the ſame root.

ANDROIDES, in *Mechanics*, a human figure, which, by certain ſprings or other movements, is capable of performing ſome of the natural motions of a living man. The motions of the human body are more complicated, and conſequently more difficult to be imitated, than thoſe of any other creature; whence the contruction of an *automaton*, in ſuch a manner as to imitate any of theſe actions with tolerable exactneſs, is juſtly ſuppoſed to indicate a greater ſkill in mechanics than any other piece of workmanſhip whatever.

A very remarkable figure of this kind appeared in Paris, in the year 1738. It repreſented a flute-player, and was capable of performing many different pieces of muſic on the German flute; which, conſidering the difficulty of blowing that inſtrument, the different contractions of the lips neceſſary to produce the diſtinctions between the high and low notes, and the complicated motions of the fingers, muſt appear truly wonderful.

This machine was the invention of M. Vaucanſon, member of the Royal Academy of Sciences; and a particular deſcription of it was publiſhed in the Memoirs of the Academy for that year.

The figure itſelf was about five feet and a half in height, ſituated at the end of an artificial rock, and placed upon a ſquare pedeſtal four feet and a half high and three and a half broad. The air entered the body by three pipes ſeparated one from the other. It was conveyed to them by nine pair of bellows, three of which were placed above and ſix below. Theſe were made to expand and contract regularly in ſucceſſion by means of an axis of ſteel turned round by ſome clock-work. On this axis were different protuberances at proper diſtances, to which were fixed cords thrown over pulleys, and terminating in the upper boards of the bellows, ſo that, as the axis turned, theſe boards were alternately raiſed and let down. A contrivance was alſo uſed to prevent the diſagreeable hiſſing fluttering noiſe uſually attending the motion of bellows. This was by making the cord, by which the bellows was moved, preſs, in its deſcent, upon one end of a ſmaller lever, the other end of which aſcending forced open the ſmall leathern valve that admitted the air, and kept it ſo, till, the cord being relaxed by the deſcent of the upper board, the lever fell, and the air was forced out. Thus the bellows performed their functions conſtantly without the leaſt hiſſing, or other noiſe, by which it could be judged in what manner the air was conveyed to the machine. The upper boards of three of the pairs of bellows were preſſed down by a weight of [illegible] pounds, that of three others by a weight of two pounds,

Androides. and thoſe of the three remaining ones by nothing but their own weight.

The three tubes, by which the air entered, terminated in three ſmall reſervoirs in the trunk of the figure. There they united, and, aſcending towards the throat, formed the cavity of the mouth, which terminated in two ſmall lips adapted in ſome meaſure to perform their proper functions. Within this cavity alſo was a ſmall moveable tongue; which, by its play, at proper periods, admitted the air, or intercepted its paſſage to the flute.

The fingers, lips, and tongue, received their proper directions by means of a ſteel cylinder turned by clock-work. It was divided into 15 equal parts, which by means of pegs, preſſing upon the ends of 15 different levers, cauſed the other extremities to aſcend. Seven of theſe levers directed the fingers, having wires and chains affixed to their aſcending extremities, which being attached to the fingers, cauſed them aſcend in proportion as the other extremity was preſſed down by the motion of the cylinder, and *vice verſa*. Thus the aſcent or deſcent of one end of a lever produced a ſimilar aſcent or deſcent in the correſponding finger, by which one of the holes of the flute was occaſionally opened or ſtopped, as by a living performer. Three of the levers ſerved to regulate the ingreſs of the air, being contrived ſo as to open and ſhut, by means of valves, the three reſervoirs of air above-mentioned, ſo that more or leſs ſtrength might be given, and a higher or lower note produced as occaſion required. The lips were, by a ſimilar mechaniſm, directed by four levers, one of which opened them, to give the air a freer paſſage; the other contracted them; the third drew them backward; and the fourth puſhed them forward. The lips were projected upon that part of the flute which receives the air; and, by the different motions already mentioned, modified the tone in a proper manner.—The remaining lever was employed in the direction of the tongue, which it eaſily moved ſo as to ſhut or open the mouth of the flute.

Thus we ſee how all the motions neceſſary for a German flute player could be performed by this machine; but a conſiderable difficulty ſtill remains, namely, how to regulate theſe motions properly, and make each of them follow in juſt ſucceſſion. This, however, was effected by the following ſimple method. The extremity of the axis of the cylinder was terminated on the right ſide by an endleſs ſcrew, conſiſting of twelve threads, each placed at the diſtance of a line and a half from the other. Above this ſcrew was fixed a piece of copper, and in it a ſteel pivot, which, falling in between the threads of the ſcrew, obliged the cylinder to follow the threads, and, inſtead of turning directly round, it was continually puſhed to one ſide. Hence, if a lever was moved, by a peg placed on the cylinder, in any one revolution, it could not be moved by the ſame peg in the ſucceeding revolution, becauſe the peg would be moved a line and a half beyond it by the lateral motion of the cylinder. Thus, by an artificial diſpoſition of thoſe pegs in different parts of the cylinder, the ſtatue was made, by the ſucceſſive elevation of the proper levers, to exhibit all the different motions of a flute-player, to the admiration of every one who ſaw it.

The conſtruction of machines capable of imitating even the mechanical actions of the human body, ſhow exquiſite ſkill; but what ſhall we ſay of one capable, not only of imitating actions of this kind, but of acting as external circumſtances require, as though it were endued with life and reaſon? This, nevertheleſs, has been done. M. de Kempelen, a gentlemen of Preſburg in Hungary, excited by the performances of M. de Vaucanſon, at firſt endeavoured to imitate them, and at laſt far excelled them. This gentleman conſtructed an androides capable of playing at chefs!—Every one who is in the leaſt acquainted with this game muſt know, that it is ſo far from being mechanically performed, as to require a greater exertion of the judgment and rational faculties than is ſufficient to accompliſh many matters of greater importance. An attempt, therefore, to make a wooden chefs-player, muſt appear as ridiculous as to make a wooden preacher or counſellor of ſtate. That this machine really was made, however, the public have had ocular demonſtration. The inventor came over to Britain in 1783, where he remained above a year with his automaton.

It is a figure as large as life, in a Turkiſh dreſs, ſitting behind a table, with doors of three feet and a half in length, two in depth, and two and a half in height. The chair on which it ſits is fixed to the table, which runs on four wheels. The automaton leans its right arm on the table, and in its left hand holds a pipe; with this hand it plays after the pipe is removed. A chefs board of 18 inches is fixed before it. This table or rather cupboard, contains wheels, levers, cylinders, and other pieces of mechaniſm; all which are publicly diſplayed. The veſtments of the automaton are then lifted over its head, and the body is ſeen full of ſimilar wheels and levers. There is a little door in its thigh, which is likewiſe opened; and with this, and the table alſo open, and the automaton uncovered, the whole is wheeled about the room. The doors are then ſhut, and the automaton is ready to play; and it always takes the firſt move.

At every motion the wheels are heard; the image moves its head, and looks over every part of the chefs board. When it checks the queen, it ſhakes its head twice, and thrice in giving check to the king. It likewiſe ſhakes its head when a falſe move is made, replaces the piece, and makes its own move; by which means the adverſary loſes one.

M. de Kempelen remarks as the moſt ſurpriſing circumſtance attending his automaton, that it had been exhibited at Preſburg, Vienna, Paris, and London, to thouſands, many of whom were mathematicians and chefs-players, and yet the ſecret by which he governed the motion of its arm was never diſcovered. He prided himſelf ſolely in the conſtruction of the mechanical powers, by which the arm could perform ten or twelve moves. It then required to be wound up like a watch, after which it was capable of continuing the ſame number of motions.

The automaton could not play unleſs M. de Kempelen or his ſubſtitute was near it to direct its moves. A ſmall ſquare box, during the game, was frequently conſulted by the exhibiter; and herein conſiſted the ſecret, which he ſaid he could in a moment communicate. He who could beat M. de Kempelen was, of courſe, certain of conquering the automaton. It was made in 1769. His own account of it was:

"C'eſt

Androlepſy || Androna.

"C'eſt une bagatelle qui n'eſt pas ſans merite du côté du mechaniſme; mais les effets n'en paroiſſent ſi merveilleux que par la hardieſſe de l'idée, et par l'heureux choix des moyens employés pour faire illuſion."

The ſtrongeſt and beſt armed loadſtone was allowed to be placed on the machine by any of the ſpectators.

As the inventor of this admirable piece of mechaniſm hath not yet thought proper to communicate to the public the means by which it is actuated, it is in vain for any, except thoſe who are exquiſitely ſkilled in mechanics, to form conjectures concerning them.—Many other curious imitations of the human body, as well as that of other animals, have been exhibited, though none of them equal to the laſt mentioned one. See the article AUTOMATON.

ANDROLEPSY, in *Grecian Antiquity*, an action allowed by the Athenians againſt ſuch as protected perſons guilty of murder. The relations of the deceaſed were empowered to ſeize three men in the city or houſe whither the malefactor has fled, till he were either ſurrendered, or ſatisfaction made ſome way or other for the murder.

ANDROMACHE, the wife of the valiant Hector, the mother of Aſtyanax, and daughter of Eetion king of Thebes in Cilicia. After the death of Hector and the deſtruction of Troy, ſhe married Pyrrhus; and afterwards Helenus the ſon of Priam, with whom ſhe reigned over part of Epirus.

ANDROMEDA, in *Aſtronomy*, a northern conſtellation, behind Pegaſus, Caſſiopeia, and Perſeus. It repreſents the figure of a woman chained; and is fabled to have been formed in memory of Andromeda, daughter of Cepheus and Caſſiopeia, and wife of Perſeus, by whom ſhe had been delivered from a ſea monſter, to which ſhe had been expoſed to be devoured for her mother's pride. Minerva tranſlated her into the heavens.

The ſtars in the conſtellation Andromeda, in Ptolemy's catalogue are 23, in Tycho's 22, in Bayer's 27, in Mr Flamſted's no leſs than 84.

ANDROMEDA, the name of a celebrated tragedy of Euripides, admired by the ancients above all the other compoſitions of that poet, but now loſt.

It was the repreſentation of this play, in a hot ſummer day, that occaſioned that epidemic fever, or phrenſy, for which the Abderites are often mentioned, wherein they walked about the ſtreets, rehearſing verſes, and acting parts of this piece. See ABDERA.

ANDROMEDA, or *March Cyſſus*. See BOTANY *Index*.

ANDRON, in Grecian antiquity, denotes the apartment in houſes deſigned for the uſe of men; in which ſenſe it ſtands oppoſed to *Gynæceum*.—The Greeks alſo gave their dining-rooms the title of *andron*, becauſe the women had no admittance to ſeaſt with the men.

ANDRONA, in ancient writers, denotes a ſtreet, or public place, where people met and converſed together. In ſome writers, *androna* is more expreſsly uſed for the ſpace between two houſes; in which ſenſe, the Greeks alſo uſe the term ἀνδρῶνες, for the way or paſſage between two apartments.

ANDRONA is alſo uſed, in eccleſiaſtical writers, for that part in churches deſtined for the men. Anciently it was the cuſtom for the men and women to have ſeparate apartments in places of worſhip, where they performed their devotions aſunder: which method is ſtill religiouſly obſerved in the Greek churches. The γυναικεῖον, or *androna*, was in the ſouthern part of the church, and the women's apartment on the northern.

ANDRONICUS I. COMNENUS, emperor of the Eaſt, was the ſon of Iſaac, and grandſon of Alexius Comnenus. Naturally endowed with a vigorous habit of body, and a ſtrong mind, a bold, turbulent, martial, and eloquent, he ſtands as one of the moſt conſpicuous characters of his age. Following the beſt of his inclination, he attended the Roman army in their retreat; but in their march through Aſia Minor, wandering into the mountains, he fell into the hands of ſome Turkiſh huntſmen, was carried to the ſultan, and remained his priſoner. But regaining his liberty, both his virtues and vices ſoon recommended him to the favour of his couſin Manuel, the reigning emperor. The victorious heart of Andronicus manifeſted itſelf clearly in maintaining a licentious correſpondence with Eudocia the emperor's niece, while the emperor himſelf lived in public inceſt with her ſiſter Theodora. His martial ſpirit gained him a conſiderable command in Cilicia, where he laid ſiege to Mopſueſtia; but by a ſucceſsful ſally of the enemy, he was obliged to raiſe the ſiege, and retire in conſiderable diſorder. Inflamed with deſire of revenging the infamy of their ſiſter in his blood, the brothers of Eudocia made an unſucceſsful attempt to aſſaſſinate Andronicus at midnight in his tent; but being providentially awakened, he defended himſelf with ſurpriſing bravery, forced his way through his enemies, and eſcaped in ſafety. Afterwards engaging in a treaſonable correſpondence, with the emperor of Germany and the king of Hungary, he was arreſted, and thrown into confinement. He remained in this ſtate about twelve years, and after ſeveral repeated attempts to eſcape, he at laſt effectuated his purpoſe, and fled for refuge to the court of the great duke of Ruſſia. The cunning of Andronicus ſoon found means to regain his favour with the emperor Manuel; for having exerted all his influence, he ſucceeded in obtaining the Ruſſian prince, to engage to join his troops with thoſe of Manuel, in the invaſion of Hungary. Accordingly, on account of his important ſervice, he obtained a free pardon from the emperor, and after an expedition to the Danube, returned with him to Conſtantinople. He again fell under the diſpleaſure of the emperor, by refuſing to take an oath of allegiance to the prince of Hungary, his intended ſon-in-law, and conſequently preſumptive heir to the crown, and was thereupon, returned to his former command in Cilicia. While reſiding here, his powerful addreſs captivated the heart of Philippa, daughter of the Latin prince of Antioch, and ſiſter to the empreſs Maria; and in her company, he ſpent his time in all the amuſements that country could afford, till the emperor's reſentment put a ſtop to their correſpondence. Thus circumſtanced, he collected a band of adventurers, and undertook a pilgrimage to the holy land, where by his inſinuating turn of mind, he ſo far ſucceeded in gaining the favour of the king and clergy, as to be inveſted with the lordſhip of Berytus on the coaſt of Phœnicia. In this neighbourhood, Theodora the beautiful widow of Baldwin, king of Jeruſalem, and nearly allied in blood to him, reſided. The perſonal accompliſhments and addreſs of Andronicus captivated her heart, and ſhe be-

Andronicus. came the third victim to his artful ſeduction, and lived publicly as his concubine. Still purſued by the emperor with unabating reſentment, he was forced to take refuge in Damaſcus, and then in ſeveral other places in the eaſt, till at length he ſettled in Aſia Minor. While reſiding here, he made frequent incurſions into the province of Trebizond, and ſeldom returned without ſucceſs. After ſeveral occurrences, Theodora was made captive, by the governor of Trebizond, along with her two children, and ſent to Conſtantinople: upon which Andronicus implored and obtained pardon. He acted the affected penitent in ſuch a manner, that he again ingratiated himſelf into the favours both of the church and ſtate: but was ſent to dwell at Oenoë, a town ſituated on the Euxine coaſt.

In the year 1177 Manuel died, and was ſucceeded by his ſon Alexius II. a youth about twelve or fourteen years of age, without wiſdom or experience, by which the ambition of Andronicus was again called into action. A civil war having been occaſioned, by the miſconduct of the empreſs in Conſtantinople, the public mind was directed towards Andronicus, as the only perſon whoſe rank and accompliſhments could reſtore the public tranquillity. Incited by the patriarchs and patricians, he marched towards Conſtantinople, which he entered, took poſſeſſion of the palace, confined the empreſs, conſigned her miniſter to death, aſſumed the office of protector, put to death many perſons of diſtinction, tried and executed the queen, on a charge of correſponding with the king of Hungary, and vowed fidelity to the young emperor upon his coronation, at the ſame time teaching the neceſſity of an experienced ruler, to aſſuage the evils that threatened the empire; upon which his adherents called out "Long live Alexius and Andronicus, Roman emperors." While he affected reluctance, he was elevated to a partnerſhip in the empire. This conjunction of the royal power was ſoon diſſolved, by the murder of the unfortunate Alexius. The body of the deceaſed being brought into his preſence, ſtriking it with his foot, he ſaid, "Thy father was a knave, thy mother a whore, and thyſelf a fool." Having arrived at the dignity of ſole emperor, A. D. 1183, he continued to ſway the ſceptre, with a mixture of juſtice and bounty towards his ſubjects at large, but thoſe whom he feared or hated he governed with the moſt cruel tyranny. The noble families that were either cut off, or exiled by him, were all allied to the Comneni. Some of theſe were engaged in revolt; and the public calamity was heightened, by an invaſion of the Sicilians, in which they took and ſacked Theſſalonica. A rival without merit, and a people without arms, at laſt overturned his throne. A deſcendant from the firſt Alexius, in the female line, named Iſaac Angelus, being ſingled out by Andronicus, as a victim to his cruelty, he with courage and reſolution defended his life and liberty, ſlew his executioner, fled to the church of St Sophia, and there took refuge with ſeveral of his friends. Iſaac was inſtantly raiſed by the populace, from a ſanctuary to a throne. When this event took place, Andronicus was abſent from Conſtantinople; but he no ſooner heard of it, than he with the utmoſt ſpeed returned. Upon his arrival there, he found himſelf deſerted by all, and was ſeized, and dragged in chains before the new emperor. All the eloquence he diſplayed was of no avail; for Iſaac delivered him into the hands of thoſe whom he had injured, and for the ſpace of three days, he endured with uncommon patience, all the inſults and torments that were inflicted upon him. In the midſt of theſe he would frequently cry out, "Lord have mercy upon me," and, "why will you bruiſe a broken reed." At laſt, two friendly or furious Italians, plunging their ſwords into his body, put a period to his life. His death, in the 73d year of his age, terminated the dynaſty of the Comneni. (*Gen. Biog.*) Andronicus II. Auguſtus.

Andronicus of Cyrrhus, an Athenian aſtronomer, built at Athens an octagon tower, with figures carved on each ſide, repreſenting the eight principal winds. A braſs Triton at the ſummit, with a rod in its hand, turned round by the wind, pointed to the quarter from whence it blew. From this model is derived the cuſtom of placing weathercocks on ſteeples.

ANDROPHAGI, in *Ancient Geography*, the name of a nation whoſe country, according to Herodotus, was adjacent to Scythia. Their name, compounded of two Greek words, ſignifies *man-eaters*. Herodotus does not inform us whether their manner of ſubſiſting correſponded with their name: whether they were ſo ſavage as to eat human fleſh. See the article ANTHROPOPHAGI. They are repreſented, however, as the moſt barbarous and fierce of all nations. They were not governed by laws: the care of their cattle was their chief employment. Their dreſs was like that of the Scythians; and they had a language peculiar to themſelves.

ANDROPOGON, or MAN'S-BEARD. See BOTANY *Index*.

ANDROS, one of the ancient Cyclades, lying between Tenedos and Eubœa: being one mile diſtant from the former, and ten from the latter. The ancients gave it various names, viz. Cauros, Laſia, Nonagria, Epagris, Antandros, and Hydruſia. The name of *Andros* it received from one Andreus, appointed, according to Diodorus Siculus, by Rhadamanthus, one of the generals, to govern the Cyclades, after they had of their own accord ſubmitted to him. As to the name of *Antandros*, the ſame author tells us, that Aſcanius the ſon of Æneas, being taken priſoner by the Pelaſgians, gave them this iſland for his ranſom, which on that account was called *Antandros*, or "delivered for one man." The name of *Hydruſia* it obtained in common with other places well ſupplied with water. It had formerly a city of great note, bearing the ſame name, and ſituated very advantageouſly on the brow of a hill, which commanded the whole coaſt. In this city, according to Strabo and Pliny, ſtood a famous temple dedicated to Bacchus. Near this temple, Mutianus, as quoted by Pliny, tells us, there was a ſpring called the *gift of Jupiter*; the water of which had the taſte of wine in the month of January, during the feaſt of Bacchus, which laſted ſeven days. The ſame author adds, that the waters, if carried to a place whence the temple could not be ſeen, loſt their miraculous taſte. Pauſanias makes no mention of this ſpring; but ſays, that, during the feaſt of Bacchus, wine flowed, or was at leaſt by the Andrians believed to flow, from the temple of that god. The prieſts, no doubt, found their account in keeping up this belief, by conveying, through ſecret conduits, a great quantity of wine into the temple.

The Andrians were the firſt of all the iſlanders who

joined

Andros. joined the Perſians at the time Xerxes invaded Greece; and therefore Themiſtocles, after the victory at Salamis, reſolved to attack the city of Andros, and oblige the inhabitants to pay large contributions for the maintenance of his fleet. Having landed his men on the iſland, he ſent heralds to the magiſtrates, acquainting them, that the Athenians were coming againſt them with two powerful divinities, *perſuaſion* and *force;* and therefore they muſt part with their money by fair means or foul. The Andrians replied, That they likewiſe had two mighty deities who were very fond of their iſland, viz. *poverty* and *impoſſibility;* and therefore could give no money. Themiſtocles, not ſatisfied with this anſwer, laid ſiege to the town; which he probably made himſelf maſter of and deſtroyed, as we are informed by Plutarch, that Pericles, a few years after, ſent thither a colony of 250 Athenians. It was, however, ſoon retaken by the Perſians; and, on the overthrow of that empire by Alexander the Great, ſubmitted to him, along with the other iſlands. On his death it ſided with Antigonus, who was driven out by Ptolemy. The ſucceſſors of the laſt mentioned prince held it to the times of the Romans; when Attalus, king of Pergamus, beſieged the metropolis at the head of a Roman army; and, having taken it, was by them put in poſſeſſion of the whole iſland. Upon the death of Attalus, the republic claimed this iſland, as well as his other dominions, in virtue of his laſt will.

Andros is now ſubject to the Turks; and contains a town of the ſame name, with a great many villages. It is the moſt fruitful iſland in all the Archipelago, and yields a great quantity of ſilk. There are ſaid to be about 12,000 inhabitants, beſides thoſe of the villages Arni and Amoldeos, who are about two hundred, have a different language and cuſtoms, and are called *Albanois*. There are ſeven monaſteries, a great number of churches, and a cathedral for the biſhops of the Roman Catholic perſuaſion; but moſt of the inhabitants are of the Greek communion. The Jeſuits had a houſe and a church in this iſland; but they were forced to quit them long ago. Here are ſome delightful vallevs; but the air is bad, and the water of the city worſe. The women would be agreeable enough, if it was not for their dreſs, which is very unbecoming; for they ſtuff out their clothes without the leaſt regard to their ſhape: but the Albaneſe women make a much better appearance. The peaſants make wicker-baſkets, wherewith they ſupply the greateſt part of the Archipelago. They have all ſorts of game in the woods and mountains, but know not how to take them for want of guns. Their principal food is goats fleſh; for there is no fiſh to be met with on their coaſts. When they are ſick, they are obliged to let the diſeaſe take its natural courſe, having neither phyſician nor ſurgeon on the iſland. A cadi, aſſiſted by a few of the principal perſons of the iſland, has the management of civil affairs, and his reſidence is in the caſtle: an aga, who preſides over the military force, lives in a tower without the city. About two miles from the preſent town are ſtill to be ſeen the ruins of a ſtrong wall with the fragments of many columns, chapiters, baſes, broken ſtatues, and ſeveral inſcriptions, ſome of which mention the ſenate and people of Andros, and the priests of Bacchus; from which it is probable that this was the ſite of the ancient city. E. Long. 25 30. N. Lat. 37. 50. Andros. Anee.

Andros, in *Ancient Geography*, an iſland in the Iriſh ſea (Pliny), called *Hedros* by Ptolemy. Now *Bardſey*, diſtant about a mile from the coaſt of North Wales.

ANDROSACE. See Botany *Index*.

ANDRUM, a kind of hydrocele, to which the people of Malabar are very ſubject.—Its origin is derived from the bad quality of the country waters, impregnated with certain ſalts, the ſource of moſt other diſeaſes that affect the Malabarians. Its ſigns, or ſymptoms, are an eryſipelas of the ſcrotum, returning every new moon, by which the lymphatics, being eroded, pour a ſerous ſaline humour into its cavity. The andrum is incurable; thoſe once ſeized with it have it for life: but it is not dangerous, nor very troubleſome to thoſe uſed to it; though ſometimes it degenerates into an hydroſarcocele. The method of prevention is by a heap of ſand fetched from a river of the province Mangatti, and ſtrewed in the wells. This is practiſed by the rich. As to the cure, they have only a palliative one; which is by inciſion, or tapping, and drawing off the water from the ſcrotum, once in a month or two.

ANDRYALA, downy sow-thistle. See Botany *Index*.

ANDUXAR, a city in the province of Andaluſia, in Spain, ſeated on the Guadalquiver. It is pretty large, indifferently rich, and defended by a good caſtle. It is adorned with handſome churches and ſeveral religious houſes, and inhabited by many families of high rank. The land about it abounds in corn, wine, oil, honey, and fruit of all ſorts; and the inhabitants carry on a conſiderable trade in ſilk. W. Long. 4. 2. N. Lat. 37. 45.

ANDUZE, a town of France, in the department of the Gard, ſeated on the river Gardon. It carries on a conſiderable trade in ſerges and woollen cloth. E. Long. 3. 42. N. Lat. 43. 39.

ANECDOTE, (*Anecdota*,) a term uſed by ſome authors for the titles of *Secret Hiſtories:* but it more properly denotes a relation of detached and intereſting particulars. The word is Greek, *ανεκδοτα*, q. d. *things not yet known* or *hitherto kept ſecret*. Procopius gives this title to a book which he publiſhed againſt Juſtinian and his wife Theodora; and he ſeems to be the only perſon among the ancients who has repreſented princes ſuch as they are in their domeſtic relation.—Varillas has publiſhed Anecdotes of the Houſe of Medicis.

Anecdotes is alſo an appellation given to ſuch works of the ancients as have not yet been publiſhed. In which ſenſe, M. Muratori gives the name *Anecdota Græca* to ſeveral writings of the Greek fathers, found in the libraries, and firſt publiſhed by him.—F. Martene has given a *Theſaurus Anecdotarum Novus*, in folio, 5 vols.

ANEE, in commerce, a meaſure for grain, uſed in ſome provinces of France. At Lyons it ſignifies alſo a certain quantity of wine, which is the load an aſs can carry at once: which is fixed at 80 Engliſh quarts, wine meaſure.

Anemometer || Anemoſcope.

ANEMOMETER, in *Mechanics*, implies a machine for meaſuring the force and velocity of the wind.

Various machines of this kind have been invented at different times, and by different perſons. The following has been often experienced, and found to anſwer the intention.

* Plate XXXIII. fig. 2.

An open frame of wood, ABCDEFGHI*, is ſupported by the ſhaft or arbor I. In the two croſs-pieces HK, LM, is moved a horizontal axis QM, by means of the four ſails *ab*, *cm*, *Of*, *gb*, expoſed to the wind in a proper manner. Upon this axis is fixed a cone of wood, MNO; upon which, as the ſails move round, a weight R, or S, is raiſed by a ſtring round its ſuperficies, proceeding from the ſmaller to the larger end NO. Upon this larger end or baſe of the cone, is fixed a rocket wheel *k*, in whoſe teeth the click X falls, to prevent any retrograde motion from the depending weight.

The ſtructure of this machine ſufficiently ſhows that it may be accommodated to eſtimate the variable force of the wind; becauſe the force of the weight will continually increaſe as the ſtring advances on the conical ſurface, by acting at a greater diſtance from the axis of motion; conſequently, if ſuch a weight be added on the ſmaller part M, as will juſt keep the machine in equilibrio in the weakeſt wind, the weight to be raiſed, as the wind becomes ſtronger, will be increaſed in proportion, and the diameter of the cone NO may be ſo large in compariſon to that of the ſmaller end at M, that the ſtrongeſt wind ſhall but juſt raiſe the weight at the greater end.

If, for example, the diameter of the axis be to that of the baſe of the cone NO as 1 to 28; then, if S be a weight of one pound at M on the axis, it will be equivalent to 28 pounds when raiſed to the greater end: if therefore, when the wind is weakeſt, it ſupports one pound on the axis, it muſt be 28 times as ſtrong to raiſe the weight to the baſe of the cone. If therefore a line or ſcale of 28 equal parts be drawn on the ſide of the cone, the ſtrength of the wind will be indicated by that number on which the ſtring reſts.

ANEMONE, WIND-FLOWER. See BOTANY *Index*.

*Sea-*ANEMONE. See *Animal-Flower*.

ANEMOSCOPE, a machine that ſhows either the courſe or velocity of the wind. (See alſo the article *Wind-Gauge*.)

The machine which ſhows the courſe of the wind, or from what point of the compaſs it blows, conſiſts of an index moving about an upright circular plate, like the dial of a clock, on which the 32 points of the compaſs are drawn inſtead of the hours. The index, which points to the diviſions on the dial, is turned by a horizontal axis, having a trundle-head at its external extremity. This trundle-head is moved by a cog-wheel on a perpendicular axis; on the top of which a vane is fixed, that moves with the courſe of the wind, and puts the whole machine in motion. The whole contrivance is extremely ſimple; and nothing required in the conſtruction, but that the number of cogs in the wheel, and rounds in the trundle-head, be equal; becauſe it is neceſſary, that, when the vane moves entirely round, the index of the dial alſo make a complete revolution.—An anemoſcope of this kind is placed in one of the turrets of the queen's palace. The anemoſcope, calculated for indicating the force or velocity of the wind, is the ſame with what moſt writers call an *anemometer*; and we have accordingly deſcribed one of thoſe machines under that article. We ſhall here add another, contrived by the late Mr Pickering, and publiſhed in the *Philoſophical Tranſactions*, N° 473. This anemoſcope is a machine four feet and a quarter high, conſiſting of a broad and weighty pedeſtal, a pillar faſtened into it, and an iron axis of about half an inch diameter faſtened into the pillar. Upon this axis turns a wooden tube; at the top of which is placed a vane, of the ſame materials, 21 inches long, conſiſting of a quadrant, graduated, and ſhod with an iron rim, notched to each degree; and a counterpoiſe of wood, as in the figure, on the other. Through the centre of the quadrant runs an iron pin, upon which are faſtened two ſmall round pieces of wood, which ſerve as moveable radii to deſcribe the degrees upon the quadrant, and as handles to a velum or ſail, whoſe pane is one foot ſquare, made of canvas, ſtretched upon four battens, and painted. On the upper batten, next to the ſhod rim of the quadrant, is a ſmall ſpring which catches at every notch correſponding to each degree, as the wind ſhall, by preſſing againſt the ſail, raiſe it up; and prevents the falling back of the ſail, upon leſſening of the force of the wind. At the bottom of the wooden tube, is an iron index, which moves round a circular piece of wood faſtened to the top of the pillar on the pedeſtal, on which are deſcribed the 32 points of the compaſs. The figure of this machine is given on Plate XXXIII. fig. 3. where *a* is the pedeſtal; *b*, the pillar on which the iron axis is fitted; *c*, the circle of wood, on which are deſcribed the 32 points of the compaſs; *e*, the wooden tube upon its axis; *f*, the velum; *g*, the graduated quadrant; *h*, the counterpoiſe of the vane. The adjoining figure repreſents the velum, which takes off: *a* is the plane of the velum; *b*, the ſpring; *cc*, the wooden radii; *dd*, the holes through which the pin in the centre of the quadrant goes. Its uſes are the following.

Anemoſcope.

1. Having a circular motion round the iron axis, and being furniſhed with a vane at top and index at the bottom, when once you have fixed the artificial cardinal points, deſcribed on the round piece of wood on the pillar, to the ſame quarters of the heavens, it gives a faithful account of that quarter from which the wind blows. 2. By having a velum or ſail elevated by the wind along the arch of the quadrant to a height proportionable to the power of the column of wind preſſing againſt it, the relative force of the wind, and its comparative power, at any two times of examination, may be accurately taken. 3. By having a ſpring fitted to the notches of the iron with which the quadrant is ſhod, the velum is prevented from returning back upon the fall of the wind; and the machine gives the force to the higheſt blaſt, ſince the laſt time of examination, without the trouble of watching it.

The ingenious contriver of this machine tells us, that he carefully examined what dependence may be had upon it, during the ſtorms of February 1743-4, and found that it anſwered exceedingly well; for that, in ſuch winds as the ſailors call *violent ſtorms*, the machine had ſix degrees to ſpare for a more violent guſt, before it comes to a horizontal poſition. It is certainly

Anethum ‖ Angel.

tainly to be depended upon in ordinary weather, the velum being hung so tenderly as to feel the most gentle breeze. There is however reason to fear, that the exposing the anemoscope to all winds for a continuance, must disorder it, especially irregular blasts and squalls. It may not therefore be amiss, in violent weather, for the observer to take the tube with its vane and velum in his hand, in order to know the force of the wind; and when he has finished his observations, to carry the machine into the house, till the violence of the storm is abated, when it may be replaced in its former situation.

ANETHUM, DILL and FENNEL. See BOTANY *Index*.

ANEURISM, in *Surgery*, a throbbing tumor, distended with blood, and formed by a dilatation or rupture of an artery. See SURGERY *Index*.

ANGARI, or ANGARII, in antiquity, denote public couriers, appointed for the carrying of messages. The ancient Persians, Budæus observes, had their ἀγγαρήιον δρομημα; which was a set of couriers on horseback, posted at certain stages or distances, always in readiness to receive the despatches from one, and forward them to another, with wonderful celerity, answering to what the moderns call *posts*, q. d. *positi*, as being posted at certain places or stages. The angari were also called by the Persians *astandæ*; by the Greeks ἡμεροδρόμοι, on account of the long journeys they made in one day, which, according to Suidas, amounted not to less than 1500 stadia.

ANGARIA, in Roman antiquity, a kind of public service imposed on the provincials, which consisted in providing horses and carriages for the conveyance of military stores and other public burdens. It is sometimes also used for a guard of soldiers, posted for the defence of a place. In a more general sense it is used for any kind of oppression, or services performed through compulsion.

ANGAZYA, one of the Comora islands, lying between the north end of Madagascar and the coast of Zanguebar in Africa, from Lat. 10° to 15° S. It is inhabited by Moors, who trade with divers parts of the continent, in cattle, fruits, and other commodities of the island; which they exchange for callicoes and other cotton cloths. The houses here are built of stone, and lime made of calcined oyster shells; with which the walls and roof are plastered in a very elegant manner. The government of Angazya is a pure aristocracy; the island being subject to 10 lords, who have all the title of *Sultan*. The people are very careful of their women; never permitting strangers to see them, without permission from a sultan, or an order which the stranger brings with him. Many of them read and write Arabic with great facility: and some even understand Portuguese, which they learn from their intercourse with Mosambique, whither they trade in vessels of 40 tons burden.

ANGEIOTOMY, in *Surgery*, implies the opening a vein or artery, as in bleeding; and consequently includes both arteriotomy and phlebotomy.

ANGEL, a spiritual intelligent substance, the first in rank and dignity among created beings. The word *angel* is Greek, and signifies a *messenger*: the Hebrew מלאך signifies the same thing. The angels are in Daniel (chap. iv. ver. 13, &c.) called עירין, or *watchers*, from their vigilance: for the same reason they are, in the remains we have of the prophecy attributed to Enoch, named *Egregori*; which word imports the same in Greek. Angel.

Angels, therefore, in the proper signification of the word, do not import the nature of any being, but only the office to which they are appointed, especially by way of message or intercourse between God and his creatures; in which sense they are called the *ministers of God*, who do his pleasure, and *ministering spirits* sent forth to minister for them who shall be heirs of salvation. That there are such beings as we call *angels*, that is, certain permanent substances, invisible and imperceptible to our senses, endued with understanding and power superior to that of human nature, created by God, and subject to him as the Supreme Being; ministring to his divine providence in the government of the world by his appointment, and more especially attending the affairs of mankind; is a truth so fully attested by Scripture, that it cannot be doubted. Nay, the existence of such invisible beings was generally acknowledged by the ancient heathens, though under different appellations: the Greeks called them *demons*; and the Romans *genii*, or *lares*. Epicurus seems to have been the only one among the old philosophers who absolutely rejected them. Indeed, the belief of middle intelligences influencing the affairs of the world, and serving as ministers or interpreters between God and man, is as extensive as the belief of a God; having never, so far as we know, been called in question by those who had any religion at all.

When created.

The creation of angels is not indeed expressly mentioned by Moses in the first of Genesis, yet it is generally considered by judicious expositors as implied. The reason why the sacred historian is silent on this subject, is supposed by Berrington to be the natural proneness of the Gentile world, and even of the Jews, to idolatry *. And it is thought, if they worshipped mere material elements, which was the case, much more might they be inclined to worship such superior and sublime beings as angels. But a better reason is perhaps given by other writers, viz. that this first history was purposely and principally for information concerning the visible world; the invisible, of which we know but in part, being reserved for a better life †.

* *On the Creation*, p. 81. See also *Severianus on the Creation*.

† *Assembly's Annot. in Gen.* i.

On what day they were created has been matter of conjecture. It is a point on which learned men have differed. The Socinians, indeed, hold, says Bishop Hopkins ‡, that it was long before the account given by Moses: but it must have been within the six days creation; because, as we are informed, that within this space God made heaven and earth, and all things that are therein. All the writers that we have seen on this subject, think they were included in the first day's work, when the heavens were framed.

‡ *Works*, p. 595.

It has been thought by some persons, that the words of Job, "When the morning stars sang together, and all the sons of God shouted for joy," militate against the creation of angels within the six days. About the meaning of these words, however, expositors are not agreed; but admitting that they refer literally to angels, Dr Lightfoot, Caryl, and others, see no difficulty in the passage. The Doctor thinks they were created on the first day, with the heavens; and that they were spectators of God's works in the other parts of creation,

Angel. and praiſed and magnified the Lord for his works all along; ſinging and ſhouting when God laid the foundation of the temple, Ezra iii.

On a ſubject of this nature it would be imprudent to *indulge* a ſpirit of conjecture: Scripture is the only ſtandard by which truth and error can be tried, and to this we muſt ultimately appeal. It is acknowledged that Moſes has not expreſsly mentioned angels by name; yet, as we have remarked, their creation is undoubtedly implied; for the heavens muſt include all that are in them; and therefore it is that the divine penman ſays, in the concluſion of his narrative, "Thus the heavens and the earth were finiſhed, and *all* the hoſt of them." Of the *hoſt* of heaven, the angels muſt form a conſiderable part; they are expreſsly called the *heavenly hoſt*, and the *armies of heaven*. Dan. iv. 35. Luke ii. 13. And if divine authority be admitted as deciſive, the reaſons adduced by Jehovah for the ſanctification of a ſabbath, demonſtrate that they did not exiſt previous to the creation of the heavens. It is, ſurely, aſſerted with propriety, that in *ſix days* the Lord made heaven and earth, the ſea, and ALL that *in them is*. Similar to which is a declaration of the divine hiſtorian relating to the ſame fact.—"And God bleſſed the ſeventh day, and ſanctified it; *becauſe* that in it he had reſted from ALL his work which God created and made," Gen. ii. 3. Now if angels exiſted prior to the ſix days of creation, the language of Moſes is far from being accurate and intelligible; and eſpecially when it is conſidered that the obſcurity might have been removed by adding, "from all the work which God had *then* created and made."

But if angels were created before the heavens, where could they exiſt? For, as the learned Gill || has remarked, "though angels have no bodies, and ſo are not in place circumſcriptively; yet as they are creatures, they muſt have an *ubi*, a ſomewhere in which they are definitively; ſo that they are here, and not there, and much leſs everywhere: Now where was there an *ubi*, a ſomewhere for them to exiſt in, before the heavens and the earth were made? It is moſt reaſonable, therefore, to conclude, that as God prepared an habitation for all the living creatures before he made them; as the ſea for the fiſhes, the expanſe, or air, for the fowls, and the earth for men and beaſts; ſo he made the heavens firſt, and then the angels to dwell in them."

|| *Body of Divinity* vol. i. p. 422.

That this was the fact, will appear very evident, if the words of Moſes be impartially conſidered. "In the beginning (ſays he), God created the heavens and the earth," which words muſt refer either to the beginning of *creation* or of *time*: if to the former, and angels previouſly exiſted, the language is neither *intelligible* nor conformable to *truth*; if to the latter, the difficulty remains; for what is time but the meaſure of created exiſtence. "Time (ſays the judicious Charnock*) began with the foundation of the world: before the beginning of the creation and the beginning of time, there could be nothing but eternity: nothing but what was uncreated, that is, nothing but what was without beginning." But if angels were in a pre-exiſtent ſtate, the hiſtorian's language is unaccountably ſtrange and inaccurate: for if the phraſe *in the beginning*, which is remarkably emphatical, refer to the creation of the heavens and the earth *only*, they are unhappily expreſſed; ſo expreſſed, indeed, as to convey no meaning to thoſe who conſider words as the vehicle of thought, and as intended to expreſs clearly to others the meaning of the writer. For the *natural obvious* ſenſe is as follows—"In the beginning of the creation of the heavens and the earth, God created the heavens and the earth;" which language is not only a departure from that perſpicuity and preciſion which diſtinguiſh all his narrations, but entirely irrational and abſurd.

* Works, vol. ii. p. 112.

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That the words *in the beginning* refer to the firſt creation, cannot be doubted, if it be remembered, that JEHOVAH himſelf founds a claim to *eternity* on this very ground: "Before the day was, I am he."—"Before the mountains were brought forth, or ever thou hadſt formed the earth and the world, even from everlaſting to everlaſting, thou art God," Iſ. xliii. 13. Pſ. ix. 2. See alſo Prov. viii. 22, 23, &c. Now there could be no propriety in this kind of reaſoning, if angels or any other creature exiſted before the creation of the world, becauſe all claims to eternity from ſuch premiſes would apply even to Gabriel as well as to JEHOVAH. "Before the world was," is, in Scripture language, a phraſe always expreſſive of eternity; and on this principle the evangeliſt John aſſerts the divinity of Jeſus Chriſt in the firſt chapter of his hiſtory. For this purpoſe he alludes to the words of Moſes, and introduces his divine maſter to notice by celebrating the firſt act of his creative power. "In the beginning (ſays he) was the Word;" that is, Dr Doddridge remarks §, before the foundation of the world, or the firſt production of any creature: and Dr Sherlock ‡ is clearly of opinion, that the words, in their moſt common and uſual acceptation, ſignify the firſt creation of all things, and are a demonſtration of the divinity of Chriſt. Of the ſame mind was Dr Owen. He ſays, that if the phraſe *beginning* does not abſolutely and formally expreſs *eternity*, yet it doth a pre-exiſtence to the whole creation, which amounts to the ſame thing; for nothing can pre-exiſt before all creatures but the nature of God, which is eternal, unleſs we ſuppoſe a creature before the creation of any. But what is meant by this expreſſion is fully declared by other paſſages of Scripture: "I was ſet up from everlaſting, before the *beginning*, or ever the earth was;" "Glorify thou me with thine own ſelf, with the glory which I had with thee before the world was;" both which paſſages not only explain the text, but undeniably prove the pre-exiſtence of Chriſt the Son of God *. It ſhould be remembered, that, in the paſſage under conſideration, the evangeliſt's argument for the *divinity* of Jeſus Chriſt is grounded on his pre-exiſting the creation of the world; and it is conſequently aſſerted, that he is the creator of all things: but if angels had a being before the period to which he alludes, the argument loſes all its force, and no more proves the divinity of Chriſt than the divinity of an angel (A).

§ *Family Expoſitor.*

‡ *Script. Proof of Chriſt's Divin.* p. 129. See alſo *Wilberforce on John* i. 1.

* *On the Trinity*, p. 43.

If, therefore, the words of Moſes be impartially viewed

(A) Of this Socinus and his followers were aware; and therefore they endeavoured to evade the force of the

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viewed in their obvious natural meaning, and compared with other paſſages of Scripture that relate to the ſame ſubject, we have no doubt but every unprejudiced mind will perceive, that as he intended to give a ſummary hiſtory of the creation of all things both in heaven and in earth, he has done it in language intelligible and accurate, and in terms ſufficiently explicit.

Their nature, power, employment, &c.

As to the nature of theſe beings, we are told, that they are ſpirits: but whether pure ſpirits diveſted of all matter, or united to ſome thin bodies, or corporeal vehicles, has been a controverſy of long ſtanding. Not only the ancient philoſophers, but ſome of the Chriſtian fathers, were of opinion, that angels were clothed with ethereal or fiery bodies, of the ſame nature with thoſe which we ſhall one day have when we come to be equal to them. But the more general opinion, eſpecially of later times, has been, that they are ſubſtances entirely ſpiritual, though they can at any time aſſume bodies, and appear in human or other ſhapes.

That the angelical powers and abilities vaſtly excel thoſe of man, cannot be denied, if we conſider, that their faculties are not clogged or impeded, as ours are, by any of thoſe imperfections which are inſeparable from corporeal being: ſo that their underſtandings are always in perfect vigour; their inclinations regular; their motions ſtrong and quick; their actions irreſiſtible by material bodies, whoſe natural qualities they can controul, or manage to their purpoſes, and occaſion either bleſſings or calamities, public or private, here below; inſtances of which are too numerous to mention.

Beſides their attendance on God, and their waiting and executing of his commands, they are alſo preſumed to be employed in taking care of mankind and their concerns: and that every man had ſuch a tutelar or guardian angel, even from his birth, was a firm belief and tradition among the Jews; and our Saviour himſelf ſeems to have been of the ſame ſentiment. The heathens were alſo of the ſame perſuaſion, and thought it a crime to neglect the admonitions of ſo divine a guide. Socrates publicly confeſſed himſelf to be under the direction of ſuch an angel, or demon, as ſeveral others have ſince done. And in this tutelar genius of each perſon they believed his happineſs and fortune depended. Every genius did his beſt for the intereſt of his client; and if a man came by the worſt, it was a ſign the ſtrength of his genius was inferior to that of his opponent, that is, of an inferior order; and this was governed by chance. There were ſome genii, whoſe aſcendant was ſo great over others, that their very preſence entirely diſconcerted them; which was the caſe of that of Auguſtus in reſpect of that of Mark Anthony; and for the ſame reaſon, perhaps, ſome perſons have wit, and ſpeak well, when others are abſent, in whoſe preſence they are confounded, and out of countenance. The Romans thought the tutelar genii of thoſe who attained the empire, to be of an eminent order; on which account they had great honours

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ſhown them. Nations and cities alſo had their ſeveral genii. The ancient Perſians to [illegible] the miniſtry of angels, and their ſuperintendance over human affairs, that they gave their names to their months, and the days of their month; and aſſigned them divers offices and provinces: and it is from them the Jews conſeſs to have received the names of the months and angels, which they brought with them when they returned from the Babyloniſh captivity. After which, we find they alſo aſſigned charges to the angels, and in particular the patronage of empires and nations; Michael being the prince of the Jews, as Raphael is ſuppoſed to have been of the Perſians.

The Mahometans have ſo great a reſpect for the angels, that they account a man an infidel who either denies their exiſtence, or loves them not. They believe them to be free from ſin, enjoying the preſence of God, to whom they are never diſobedient: that they have ſubtle pure bodies, being created of light; and have no diſtinction of ſexes, nor do they need the refreſhment of food or ſleep. They ſuppoſe them to have different forms and offices: That ſome adore God in ſeveral poſtures; others ſing his praiſes, and intercede for men; ſome carry and encompaſs his throne; others write the actions of men, and are aſſigned guardians to them.

As the numbers of theſe celeſtial ſpirits are very great, it is likewiſe reaſonable to believe that there are ſeveral orders and degrees among them; which is alſo confirmed by Scripture; whence ſome ſpeculative men have diſtributed them into nine orders, according to the different names by which they are there called; and reduced thoſe orders into three *hierarchies*, as they call them; to the firſt of which belong ſeraphim, cherubim, and thrones; to the ſecond, dominions, virtues, and powers; and to the third principalities, archangels, and angels. They imagine farther, that there are ſome who conſtantly reſide in heaven; others who are miniſters, and ſent forth, as there is occaſion, to execute the orders they receive from God by the former. The Jews reckon but four orders or companies of angels, each headed by an archangel; the firſt order being that of Michael, the ſecond of Gabriel, the third of Uriel, and the fourth of Raphael; but though the Jews believe them to be four, yet it ſeems there were rather ſeven. The Perſians alſo held, there were ſubordinate degrees among the angels.

Of the fallen angels.

Although the angels were originally created perfect, good, and obedient to their Maſter's will, yet ſome of them ſinned, and kept not their firſt eſtate, but left their habitation; and ſo, of the moſt bleſſed and glorious, became the moſt vile and miſerable of all God's creatures. They were expelled the regions of light, and caſt down to hell, to be reſerved in everlaſting chains under darkneſs, until the day of judgment. With heaven they loſt their heavenly diſpoſition, which delighted once in doing good and praiſing God; and fell into a ſettled rancour againſt him, and malice againſt

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the apoſtle's reaſoning, by interpreting the phraſe *in the beginning* either in a figurative ſenſe, or as referring to the beginning of John the Baptiſt's miniſtry. We will only ſubjoin, that we do not remember to have ſeen any writer deviate from the primary obvious meaning of the paſſage, who had not ſome hypotheſis to ſupport inimical to truth.

Angel. against men: their inward peace was gone; all desire of doing good departed from them; and, instead thereof, revengeful thoughts and despair took possession of them, and created an eternal hell within them.

When, and for what offence, these apostate spirits fell from heaven, and plunged themselves into such an abyss of wickedness and woe, are questions very hard, if not impossible, to be determined by any clear evidence of Scripture. As to the time, we are certain that it could not be before the sixth day of creation; because on that day it is said, "God saw every thing that he had made, and behold it was very good:" but that it was not long after it is very probable, as it must have preceded the fall of our first parents. Some have imagined it to have been after; and that carnality, or lusting to converse with women upon earth, was the sin which ruined them: an opinion (B) built upon a mistaken interpretation of Scripture, as if angels were meant by *the sons of God* who are said to have begotten the mighty men of old on the daughters of men. Others have supposed, that the angels, being informed of God's intention to create man after his own image, and to dignify his nature by Christ's assuming of it, and thinking their glory to be eclipsed thereby, envied man's happiness, and so revolted; and with this opinion that of the Mahometans has some affinity; who are taught, that the devil, who was once one of those angels who are nearest to God's presence, and named *Azazil*, forfeited paradise for refusing to pay homage to Adam at the command of God. But on what occasion soever it first showed itself, pride seems to have been the leading sin of the angels; who, admiring and valuing themselves too much on the excellence of their nature and the height of their station, came at length to entertain so little respect for their Creator, as to be guilty of downright rebellion and apostasy.

It is certain from Scripture, that these fallen angels were in great numbers, and that there were also some order and subordination preserved among them; one especially being considered as their prince, and called by several names, *Beelzebub*, *Satan*, or *Sammael* by the Jews; *Ahârimam* by the Persians; and *Eblis* by the Mahometans. Their constant employment is not only doing evil themselves, but endeavouring by all arts and means to seduce and pervert mankind, by tempting them to all kind of sin, and thereby bringing them into the same desperate state with themselves.

Angel is likewise a title given to bishops of several churches. In this sense St Paul is understood by some authors, where he says, *Women ought to be covered in the church, because of the angels.* The learned Dr Prideaux observes, that the minister of the synagogue, who officiated in offering up the public prayers, being the mouth of the congregation, delegated by them as their representative, messenger, or angel, to speak to God in prayer for them, was therefore, in the Hebrew language, called the *angel* of the church; and from thence the bishops of the seven churches of Asia are, by a name borrowed from the synagogue, called the *angels* of those churches. Angel || Angelites.

Angel, in commerce, the name of a gold coin formerly current in England. It had its name from the figure of an angel represented upon it, weighed four pennyweights, and was twenty-three and a half carats fine. It had different values in different reigns; but is at present only an imaginary sum, or money of account, implying ten shillings.

Angel-Fish. See Squalus, Ichthyology *Index.*

Angelic, or Angelical, something belonging to, or that partakes of, the nature of angels. We say an *angelical* life, &c. St Thomas is styled the *angelical doctor.* The angelical salutation is called by the Romanists *Ave Maria;* sometimes simply *angelus.*

Angelic Garment (*Angelica vestis*), among our ancestors, was a monkish garment, which laymen put on a little before their death, that they might have the benefit of the prayers of the monks. It was from them called *angelical*, because they were called *angeli*, who by these prayers *animæ saluti succurrebant.* Hence, where we read the phrase *monachus ad succurrendum* in our old books, it must be understood of one who had put on the habit when he was at the point of death.

Angelica. See Botany *Index.*

Angelics, Angelici, in church history, an ancient sect of heretics, supposed by some to have got this appellation from their excessive veneration of angels; and by others, from their maintaining that the world was created by angels.

Angelics is also the name of an order of knights, instituted in 1191, by Angelus Flavius Comnenus emperor of Constantinople.

Angelics is also a congregation of nuns, founded at Milan in 1534, by Louisa Torelli, countess of Guastalla. They observe the rule of St Augustine.

Angelites, in ecclesiastical history, a sect of Christian heretics, in the reign of the emperor Anastasius, and the pontificate of Symmachus, about the year 494, so called from Angelium, a place in the city of Alexandria, where they held their first meetings. They were called likewise *Severites*, from one Severus, who was the head of their sect; as also *Theodosians*, from one

(B) This opinion seems to have been originally occasioned by some copies of the Septuagint, which, in the days of St Austin, had in this place *the angels of God.* Lactantius supposes the angels, who were guilty of this enormity, had been sent down by God to guard and take care of mankind; and being endued with free-will, were charged by him not to forfeit the dignity of their celestial nature, by defiling themselves with the corruptions of the earth; but that the devil at length enticed them to debauch themselves with women. He adds, that, not being admitted into heaven by reason of the wickedness into which they had plunged themselves, they fell down to the earth, and became the devil's ministers; but that those who were begotten by them, being neither angels nor men, but of a middle nature, were not received into hell, no more than their parents were into heaven. Hence arose two kinds of demons, celestial and terrestrial. These are unclean spirits, the authors of whatever evils are committed, and whose prince is the devil. From hence very probably proceeded the notions of *Incubi*, or demons who are supposed to have carnal knowledge of women.

Angelo, Angelos.

one among them named Theodoſius, whom they made pope at Alexandria. They held, that the perſons of the Trinity are not the ſame; that none of them exiſts of himſelf, and of his own nature; but that there is a common god or deity exiſting in them all, and that each is God, by a participation of this deity.

ANGELO, Michael. There were five celebrated Italian painters of this name, who flouriſhed in the 16th and 17th centuries; but the two moſt diſtinguiſhed of them are theſe.—Firſt, Michael Angelo Buonarotti, who was a moſt incomparable painter, ſculptor, and architect, born in 1474, in the territory of Arezzi in Tuſcany. He was the diſciple of Dominico Ghirlandaio; and erected an academy of painting and ſculpture in Florence, under the protection of Lorenzo di Medicis; which, upon the troubles of that houſe, was obliged to remove to Bologna. About this time he made an image of Cupid, which he carried to Rome, broke off one of its arms, and buried the image in a place he knew would ſoon be dug up, keeping the arm by him. It was accordingly found, and ſold to Cardinal St Gregory for an antique; until Michael, to their confuſion and his own credit, diſcovered his artifice, and confirmed it by the deficient arm which he produced: it is rather unuſual for the manufacturers of antiques to be ſo ingenuous. His reputation was ſo great at Rome, that he was employed by Pope Sixtus to paint his chapel; and by the command of Pope Paul III. executed his moſt celebrated piece, *The Laſt Judgment*. He has the character of being the greateſt deſigner that ever lived; and it is univerſally allowed that no painter ever underſtood anatomy ſo well. He died immenſely rich at Rome, in 1564.—Secondly, Michael Angelo de Caravaggio, born at that village in Milan, in 1569. He was at firſt no more than a bricklayer's labourer; but he was ſo charmed with ſeeing ſome painters at work, that he immediately applied himſelf to the art; and made ſuch progreſs in a few years, that he was admired as the author of a new ſtyle of painting. It was obſerved of Michael Angelo Buonarotti, that he was incomparable in deſigning, but knew little of colouring; and of Caravaggio, that he had as good a gout in colouring as he had a bad one in deſigning. There is one picture of his in the Dominican church at Antwerp, which Rubens uſed to call his maſter. It is ſaid of this painter, that he was ſo ſtrangely contentious, that the pencil was no ſooner out of his hand but his ſword was in it. He died in 1609.

ANGELO, St, a ſmall but ſtrong town of Italy, in the Capitanata. There are ſeveral other towns and caſtles of the ſame name in Italy, and particularly the caſtle of St Angelo at Rome. E. Long. 15. 56. N. Lat. 41. 43.

ANGELOS, Los, a province of Mexico, the ancient republic of Tlaſcala, of which a city called *Tlaſcala* was once the capital. That city is now reduced to an inconſiderable village, and has given place to another called *Puebla des los Angelos*, or the city of Angels. It is ſituated in W. Long. 103. 12. and N. Lat. 19. 13. It was formerly an Indian town; but in 1530 was entirely abandoned by the natives, on account of the cruelties of the Spaniards. A ſucceeding viceroy of Mexico, by a milder treatment, recalled them; and the town is now exceedingly rich and populous, ſo as even to vie with Mexico itſelf in magnificence. It is ſituated on the river Zacatula, in a fine valley, about 25 leagues to the eaſtward of Mexico. In the middle of a beautiful and ſpacious ſquare, from whence run the principal ſtreets in direct lines, which are croſſed by others at right angles. One ſide [illegible] entirely occupied by the magnificent front of the cathedral; while the other three conſiſt of piazzas, under which are the ſhops of tradeſmen. The city is the ſee of a biſhop, ſuffragan to the archbiſhop of Mexico, and we may form a judgment of the wealth of the place by the revenue of the cathedral and chapter, which amounts to 300,000 pieces of eight annually. It muſt be remembered, however, that in all popiſh countries the wealth of the laity by no means bears the ſame proportion to that of the clergy as in Britain. What contributes greatly to increaſe the riches of this province is, that here is ſituated the city of Vera Cruz, the natural centre of all the American treaſures belonging to Spain. See Vera Cruz.

Angelos, Angelos.

ANGELOT, an ancient Engliſh gold coin, ſtruck at Paris, while under ſubjection to the Engliſh. It was thus called from the figure of an angel ſupporting the ſcutcheon of the arms of England and France. There was another coin of the ſame denomination ſtruck under Philip de Valois.

Angelot is alſo uſed in *Commerce* to denote a ſmall, fat, rich ſort of cheeſe, brought from Normandy. Skinner ſuppoſes it to have been thus called from the name of the perſon who firſt made it up in that form, and perhaps ſtamped it with his own name. Menage takes it to have been denominated from the reſemblance it bears to the Engliſh coin called *angelot*. It is made chiefly in the Pays de Bray, whence it is alſo denominated *angelot de Bray*. It is commonly made in vats, either ſquare or ſhaped like a heart.

ANGER, a violent paſſion of the mind, conſiſting in a propenſity to take vengeance on the author of ſome real or ſuppoſed injury done the offended party.

Anger is either deliberative or inſtinctive; and the latter kind is raſh and ungovernable, becauſe it operates blindly, without affording time for deliberation or foreſight. Biſhop Butler very juſtly obſerves, that anger is far from being a ſelfiſh paſſion, ſince it is naturally excited by injuries offered to others as well as to ourſelves; and was deſigned by the Author of nature not only to excite us to act vigorouſly in defending ourſelves from evil, but to intereſt us in the defence or reſcue of the injured and helpleſs, and to raiſe us above the fear of the proud and mighty oppreſſor.

Neither, therefore, is all anger ſinful: hence the precept, "Be ye angry and ſin not."—It becomes ſinful, however, and contradicts the rule of Scripture, when it is conceived upon ſlight and inadequate provocations, and when it continues long. It is then contrary to the amiable ſpirit of charity, which "ſuffereth long, and is not eaſily provoked." Hence theſe other precepts, "Let every man be ſlow to anger;" and, "Let not the ſun go down upon your wrath."

Theſe precepts, and all reaſoning indeed upon the ſubject, ſuppoſe the paſſion of anger to be within our power: and this power conſiſts not ſo much in any faculty we have of appeaſing our wrath at the time (for we are paſſive under the ſmart which an injury or affront occaſions, and all we can then do is to prevent its breaking out into action), as in ſo mollifying our mind:

Anger

minds by habits of juſt reflection, as to be leſs irritated by impreſſions of injury, and to be ſooner pacified.

As reflections proper for this purpoſe, and which may be called the *ſedatives* of anger, the following are ſuggeſted by Archdeacon Paley in his excellent treatiſe of *Moral and Political Philoſophy**—"The poſſibility of miſtaking the motives from which the conduct that offends us proceeded; how often *our* offences have been the effect of inadvertency, when they were miſtaken for malice; the inducement which promoted our adverſary to act as he did, and how powerfully the ſame inducement has, at one time or other, operated upon ourſelves; that he is ſuffering perhaps under a contrition, which he is aſhamed, or wants opportunity, to confeſs; and how ungenerous it is to triumph by coldneſs or inſult over a ſpirit already humbled in ſecret; that the returns of kindneſs are ſweet, and that there is neither honour nor virtue nor uſe in reſiſting them—for ſome perſons think themſelves bound to cheriſh and keep alive their indignation, when they find it dying away of itſelf. We may remember that others have their paſſions, their prejudices, their favourite aims, their fears, their cautions, their intereſts, their ſudden impulſes, their varieties of apprehenſion, as well as we: we may recollect what hath ſometimes paſſed in our own minds, when we have got on the wrong ſide of a quarrel, and imagine the ſame to be paſſing in our adverſary's mind now; when we became ſenſible of our miſbehaviour, what palliations we perceived in it, and expected others to perceive; how we were affected by the kindneſs, and felt the ſuperiority, of a generous reception and ready forgiveneſs; how perſecution revived our ſpirits with our enmity, and ſeemed to juſtify the conduct in ourſelves which we before blamed. Add to this, the indecency of extravagant anger; how it renders us, whilſt it laſts, the ſcorn and ſport of all about us, of which it leaves us, when it ceaſes, ſenſible and aſhamed; the inconveniences and irretrievable miſconduct into which our iraſcibility has ſometimes betrayed us; the friendſhips it has loſt us; the diſtreſſes and embarraſſments in which we have been involved by it, and the ſore repentance which on one account or other it always coſts us.

* Book III. Part ii. chap. 7.

"But the reflection calculated above all others to allay that haughtineſs of temper which is ever finding out provocations, and which renders anger ſo impetuous, is that which the goſpel propoſes; namely, that we ourſelves are, or ſhortly ſhall be, ſuppliants for mercy and pardon at the judgment-ſeat of God. Imagine our ſecret ſins all diſcloſed and brought to light; imagine us thus humbled and expoſed; trembling under the hand of God; caſting ourſelves on his compaſſion; crying out for mercy—imagine ſuch a creature to talk of ſatisfaction and revenge, refuſing to be entreated, diſdaining to forgive, extreme to mark and to reſent what is done amiſs; imagine, I ſay, this; and you can hardly feign to yourſelf an inſtance of more impious and unnatural arrogance."

Phyſicians and naturaliſts have recorded inſtances of very extraordinary effects of this paſſion. Borrichius cured a woman of an inveterate tertian ague, which had baffled the art of phyſic, by putting the patient in a furious fit of anger. Valeriola made uſe of the ſame means, with the like ſucceſs, in a quartan ague. The ſame paſſion has been equally ſalutary to paralytic, gouty, and even dumb perſons; to which laſt it has ſometimes given the uſe of ſpeech. Etmuller gives divers inſtances of very ſingular cures wrought by anger; among others, he mentions a perſon laid up in the gout, who being provoked by his phyſician, flew upon him, and was cured. It is true, the remedy is ſomewhat dangerous in the application, when a patient does not know how to uſe it with moderation. We meet with ſeveral inſtances of princes to whom it has proved mortal; e. g. Valentinian the firſt, Wenceſlaus, Matthius Corvinus king of Hungary, and others. There are alſo inſtances wherein it has produced the epilepſy, jaundice, cholera morbus, diarrhœa, &c. In fact, this paſſion is of ſuch a nature, that it quickly throws the whole nervous ſyſtem into preternatural commotions, by a violent ſtricture of the nervous and muſcular parts; and ſurpriſingly augments not only the ſyſtole of the heart and of its contiguous veſſels, but alſo the tone of the fibrous parts in the whole body. It is alſo certain, that this paſſion, by the ſpaſmodic ſtricture it produces in the parts, exerts its power principally on the ſtomach and inteſtines, which are highly nervous and membranous parts; whence the ſymptoms are more dangerous, in proportion to the greater conſent of the ſtomach and inteſtines, with the other nervous parts, and almoſt with the whole body. The unhappy influence of anger likewiſe, on the biliary and hepatic ducts, is very ſurpriſing; ſince by an intenſe conſtriction of theſe, the liver is not only rendered ſcirrhous, but ſtones alſo are often generated in the gall-bladder and biliary ducts: theſe accidents have ſcarcely any other origin than an obſtruction of the free motion and efflux of the bile, by means of this violent ſtricture. From ſuch a ſtricture of theſe ducts likewiſe proceeds the jaundice, which in proceſs of time lays a foundation for calculous concretions in the gall-bladder. Laſtly, By increaſing the motion of the fluid, or the ſpaſms of the fibrous parts, by means of anger, a larger quantity of blood is propelled with an impetus to certain parts; whence it happens that they are too much diſtended, and the orifices of the veins diſtributed there opened. It is evident from experience, that anger has a great tendency to excite enormous hæmorrhages, either from the noſe, the aperture of the pulmonary artery, the veins of the anus; or in women, from the uterus, eſpecially in thoſe previouſly accuſtomed and diſpoſed to ſuch evacuations.

Angerona

ANGERMANNIA, or ANGERMANLAND, a province of Sweden, bounded on the north by Lapland and Bothnia, on the eaſt by the gulf of Bothnia and Medelpadia, and on the weſt by Jempti and Herndel. It is full of rocks, mountains, and foreſts; and there is one very high mountain called *Scull*. It has excellent iron works, and lakes abounding with fiſh.

ANGERMOND, a town of the duchy of Berg, in Germany, on the eaſt ſide of the Rhine, ſubject to the Elector Palatine. E. Long. 6. 20. N. Lat. 51. 10.

ANGERONA, in *Mythology*, the name of a Pagan deity whom the Romans prayed to for the cure of the *quinſy*, in Latin *angina*. Pliny calls her the *goddeſs of ſilence* and *calmneſs of mind*, who baniſhes all uneaſineſs and melancholy. She is repreſented with her mouth covered, to denote patience and refraining from complaints. Her ſtatue was ſet up, and ſacrificed to, in the temple of the goddeſs Volupia, to

Angerona-lia || Anglicia.

ſhow that a patient enduring of affliction leads to pleaſure.

ANGERONALIA, in antiquity, ſolemn feaſts held by the Romans on the 21ſt of December, in honour of Angerona, or Angeronia, the goddeſs of patience and ſilence. Feſtus and Julius Modeſtus, quoted by Macrobius, Saturn. lib. i. cap. 10. derive the name from *angina*, "quinſy;" and ſuppoſe the goddeſs to have been thus denominated, becauſe ſhe preſided over that diſeaſe.—Others ſuppoſe it formed from *angor*, "grief, pain;" to intimate that ſhe gave relief to thoſe afflicted therewith.—Others deduce it from *ango*, "I preſs, I cloſe," as being reputed the goddeſs of ſilence, &c.

ANGERS, a city of France, and capital of the former duchy of Anjou, now the department of the Maine and Loire. It is ſeated a little above the place where the Sarte and the Loire loſe themſelves in the Maine. This laſt river divides the city into two equal parts, called the High and the Low Town. There are twelve pariſhes in the city, and four in the ſuburbs, which contain upwards of 36,000 inhabitants. Beſides theſe, there are eight chapters, and a great number of convents for both ſexes. Its greateſt extent is along the declivity of a hill, which reaches quite down to the river ſide. The caſtle was built by St Louis, about the middle of the 13th century. The walls, foſſes, and numerous towers which yet ſubſiſt, evince its former magnificence: and its ſituation in the centre of the city, on a rock overhanging the river, conduces to give it an air of grandeur, though at preſent in decay. It was the principal reſidence of the kings of Sicily, as dukes of Anjou, but is now in a ſtate of total ruin. The cathedral of Angers is a venerable ſtructure; and although it has undergone many alterations in the courſe of ages ſince its conſtruction, yet the architecture is ſingular, and deſerves attention. Here lies interred with her anceſtors the renowned Margaret, daughter of René king of Sicily, and queen of Henry VI. of England. She expired, after her many intrepid but ineffectual efforts to replace her huſband on the throne, in the year 1482, at the caſtle of Dampierre in Anjou. Near the church of St Michael is the handſomeſt ſquare in the city, from whence runs a ſtreet which has the name of the church. On one ſide of this ſtreet is the town-houſe; which has a fine tower, with a clock, raiſed upon an arch which ſerves for a paſſage into the great ſquare. There are two large bridges, which keep up a communication between the two parts of the city; and in the leſſer of theſe there is another ſquare, which ſerves for a market. The univerſity of Angers was founded in 1398, and the academy of belles lettres in 1685. This laſt conſiſts of thirty academicians. At the end of the ſuburb of Breſigny are the quarries of Angers, ſo famous for the fine ſlate which is got from thence. The pieces are of the thickneſs of a crown piece, and a foot ſquare. All the houſes in Angers are covered with this ſlate, which has gained it the appellation of the *Black City*. The walls with which King John of England ſurrounded it in 1214 remain nearly entire, and are of very great circumference. W. Long. 0. 35. N. Lat. 47. 30.

ANGHIERA, a town of Italy, in the duchy of Milan, and capital of a county of the ſame name. It is ſeated on the eaſtern ſide of the lake Maggiore, in E. Long. 8. 40. N. Lat. 45. 42.

ANGINA, in *Medicine*, a ſecond inflammation of the throat, otherwiſe called *quinſy*. See Medicine *Index*.

Angina Pectoris. See Medicine *Index*.

ANGIOSPERMIA, in the Linnæan ſyſtem of botany, the ſecond order in the claſs didynamia. It conſiſts of thoſe plants, of that claſs, whoſe ſeeds are incloſed in a pericarpium. In this order the ſtigma is generally obtuſe. Theſe are the *perſonatæ* of Tournefort.

ANGITIÆ LUCUS or NEMUS, (Virg.). ſituated on the weſt ſide of the Lake Fucinus. The inhabitants are called *Lucenſes*, by Pliny. Angitia was ſiſter of Medea, who taught antidotes againſt poiſon and ſerpents, according to Sil. Italicus. But Servius on Virgil ſays, that the inhabitants called Medea by this name for the ſame reaſon. The town is now called *Luco*.

ANGLE, the inclination of two lines meeting one another in a point. See Geometry.

Angle of Incidence, in *Optics*, the angle which a ray of light makes with a perpendicular to that point of the ſurface of any medium on which it falls; though it is ſometimes underſtood of the angle which it makes with the ſurface itſelf.

Angle of Refraction now generally means the angle which a ray of light, refracted by any medium, makes with a perpendicular to that point of the ſurface on which it was incident; but has ſometimes been underſtood of the angle which it makes with the ſurface of the refracting medium itſelf.

ANGLER, a perſon who practiſes the art of angling, whether as a diverſion or otherwiſe. See the article Angling.

Angler, the Engliſh name of a ſpecies of lophus. See Lophus, Ichthyology *Index*.

ANGLES, an ancient German nation, originally a branch of the Suevi: who, after various migrations, ſettled in that part of Denmark, and duchy of Sleſwick, which to this day is called *Angel*, and of which the city of Flenſburgh is the capital. Here they were known, even in the time of Tacitus, by the name of *Angli*. The origin of this name is variouſly accounted for. According to Saxo-Grammaticus, they were called *Angli*, from one Angulus, ſon to Humblus king of Denmark. Widiſchind, a Saxon writer, will have them to be called *Angli*, from an iſland in the corner or angle of the ſea, which they conquered. Goropius derives their name from the Saxon word *Angel* or *Engel*, ſignifying a fiſh-hook; the Angles, like the other Saxon nations, being greatly addicted to piracy, and on that account being ſo named by the neighbouring nations; as if, like hooks, they caught all that was in the ſea. To this nation the Britiſh ambaſſadors are ſaid to have applied, when ſoliciting ſuccours againſt the Scots and Picts. The Angles, therefore, came over in greater numbers than any other Saxon nation; and accordingly had the honour of giving the name of *Anglia* to England. See England

ANGLESEY, Isle of, is the moſt weſtern county of North Wales. It is 24 miles in length, 15 in breadth, and ſends one member to parliament. It is ſeparated from Caernarvonſhire by a ſtrait called *Menai*,

Anglesey. *Menai*, and on every other side is surrounded by the sea. It is a fertile spot, and abounds in corn, cattle, fleth, fish, and fowls.

At Port Aethwy, the most general ferry into the island, there is a great passage of cattle. It is computed that the island sends forth annually from 12,000 to 15,000 head, and multitudes of sheep and hogs. It is also computed that the remaining stock of cattle is 30,000. In 1770 upwards of 90,000 bushels of corn were exported, exclusive of wheat. The improvement in husbandry has greatly increased since the suppression of smuggling from the isle of Man: before that time every farmer was mounted on some high promontory, expecting the vessel with illicit trade; but since that period, he sets in earnest to industry and cultivation. Not but that the island was in the most remote times famous for its fertility: Mon, Mam Gymry, the Nursing mother of Wales, was a title it assumed even in the 12th century.

This island is divided into 74 parishes, of which most of the churches are situated near the shores. By an account given on the 13th of August 1563, there were 2010 households, or families, in Anglesey; allowing five to a family, the whole number of inhabitants at that period was 10,050. In 1776, the number of houses in Anglesey was about 3956: allowing five persons to a family, the whole number of inhabitants was at that time 19,780; which wants only 340 of doubling the number of inhabitants in the intervening space. The chief town is Beaumaris.

In ancient times this island was called *Mon*, *Mona*, or *Moneg*. It was the great nursery of the religion of the Druids, being the residence of the grand druid, or chief pontiff, and consequently of all the learned doctors in that religion.

Many ancient monuments of druidism still remain in the island.—At Tre'r Dryw, or the habitation of the arch druid, are several mutilated remains, which have been described by Mr Rowlands. His *Bryn Gwyn*, or *Brein Gwyn*, or royal tribunal, is a circular hollow of 180 feet in diameter, surrounded by an immense agger of earth and stones, evidently brought from some other place, there not being any mark of their being taken from the spot. It has only a single entrance. This is supposed to have been the grand consistory of the druidical administration.—Not far from it was one of the *Gorseddau*, now in a manner dispersed, but which once consisted of a great copped heap of stones, on which sat aloft a druid, instructing the surrounding people *multa de Deorum immortalium vi et potestate disputare, et juventuti tradunt*; Cæs. lib. 6.—There were also the relicks of a circle of stones, with the *cromlech* in the midst; but all extremely imperfect. Two of the stones are very large; one, which serves at present as part of the end of a house, is 12 feet 7 inches high, and 8 feet broad: and another 11 feet high, and 23 feet in girth. Some lesser stones yet remain. This circle, when complete, was one of the temples of the druids, in which their religious rites were performed. It is the conjecture of Mr Rowlands, that the whole of these remains were surrounded with a circle of oaks, and formed a deep and sacred grove: *Jam per se roborum elegans lucus, neque ulla sacra sine ea fronde conficiunt*; (Plin. Hist. Nat. xv. 44.)—Near this [illegible] on the mounted intrenchment: of a square form, with a double rampart, and broad ditch intervening, and a lesser on the outside. Within are foundations of circular and of square buildings. This Mr Rowlands supposes to have been the residence of the arch druid, and to have given the name, *Tre'r Dryw*, to the township in which it stands. At Trev Wry are several faint traces of circles of stones, and other vestiges of buildings; but all so dilapidated, or hid in weeds, as to become almost formless. *Bod-druddn*, or the habitation of the druids, *Tre'r-Beirdd*, or that of the bard, and *Bodowyr*, or that of the priests, are all of them hamlets, nearly surrounding the seat of the chief druid, composing the essential part of his suite. At the last is a thick cromlech, resting on three stones. Anglesey.

The shore near Porthamel, not far from hence, is famed for being the place where Suetonius landed, and put an end in this island to the druid reign. His infantry passed over in flat-bottomed boats, perhaps at the spot still called *Pant yr Yscraphie*, or the valley of *Skiffs*. His cavalry crossed partly by fording, partly by swimming. Of the conflict on this occasion we have the following animated description by Tacitus*: "Stat pro littore diversa acies, densa armis virisque, intercursantibus fœminis in modum furiarum, veste ferali, crinibus dejectis, faces perferebant; *druidæque* circum, preces diras sublatis ad cœlum manibus fundentes. Novitate aspectus percutere militem, ut quasi hærentibus membris, immobile corpus vulneribus præberent. Dein cohortationibus ducis, et se ipse stimulantes, ne muliebre et fanaticum agmen paveseerent, inferunt signa, sternuntque obvios et igni suo involvunt. Præsidium posthac impositum vicis, excisique luci, sævi superstitionibus sacri. Nam cruore captivo adolere aras, et hominum fibris consulere deos fas habebant."—Thus Englished: "On the shore stood a motley army in close array, and well armed; with women running wildly about in black attire with dishevelled hair, and like the furies brandishing their torches; surrounded by the druids, lifting up their hands to heaven, and pouring forth the most dreadful imprecations. The soldier stood astonished with the novelty of the sight. His limbs grew torpid, and his body remaining motionless resigned to every wound. At length, animated by their leader, and rousing one another not to be intimidated with a womanly and fanatic band, they displayed their ensigns, overthrew all who opposed them, and flung them into their own fires. After the battle, they placed garrisons in the towns, and cut down the groves consecrated to the most horrible superstitions: for the Britons held it right to sacrifice on their altars with the blood of their captives, and to consult the gods by the inspection of human entrails." There are no traces of any Roman works left in this country. Their stay was so short, that they had not time to form any thing permanent. * *Annal.* xiv. 30.

Near the ferry of Moel y Don appear the fine woods of Sir Nicholas Bayley, skirting the Menai for a considerable way. The wooded part of the island is on this side. It commences at Llanidan, and recals the ancient British name of Anglesey, *Ynys Dywyll*, or the *Dark Island*, on account of the deep shade of its groves: but at present it is (except in his part) entirely divested of trees; and the climate so averse to their growth, that in most parts it is with great difficulty the

Anglesey. the gentry can raiſe a plantation round their houſes. Plas Newydd, the ſeat of Sir Nicholas Bayley, lies cloſe upon the water, protected on three ſides by venerable oaks and aſhes. The view up and down this magnificent river-like ſtrait is extremely fine. The ſhores are rocky; thoſe on the oppoſite ſide covered with woods; and beyond loar a long range of Snowdonian Alps. Here ſtood a houſe built by Gwenllian, a deſcendant of Cadrod Hardd. The manſion has been improved, and altered to a caſtellated form by the preſent owner.

In the woods are ſome very remarkable druidical antiquities. Behind the houſe are to be ſeen two vaſt cromlechs. The upper ſtone of one is 12 feet 7 inches long, 12 broad, and four thick, ſupported by five tall ſtones. The other is but barely ſeparated from the firſt; is almoſt a ſquare, of five feet and a half, and ſupported by four ſtones. The number of ſupporters to cromlechs is merely accidental, and depends on the ſize or form of the incumbent ſtone. Theſe are the moſt magnificent we have, and the higheſt from the ground; for a middle-ſized horſe may eaſily paſs under the largeſt. In the lands of Llugwy, indeed, there is a moſt ſtupendous one of a rhomboidal form. The greateſt diagonal is 17½ feet, the leſſer 15, and the thickneſs three feet nine inches; but its height from the ground is only two feet: it was ſupported by ſeveral ſtones. The Welſh, who aſcribe every thing ſtupendous to our famous Britiſh king, call it *Arthur's Quoit*. In the woods at this place are ſome druidical circles nearly contiguous to each other.

At a ſmall diſtance from Beaumaris, on the ſhore, ſtand the remains of Llanvaes, or the Friars. It was founded by Prince Llewelyn ap Jerwerth, and, according to the general tradition of the country, over the grave of his wife Joan, daughter of King John, who died in 1237, and was interred on the ſpot. Here alſo were interred a ſon of a Danith king, Lord Clifford, and many barons and knights who fell in the Welſh wars. It was dedicated to St Francis, and conſecrated by Howel biſhop of Bangor, a prelate who died in 1240. The religious were Franciſcans, or minor friars. Their church and houſe were deſtroyed, and their lands waſted, in the inſurrection made ſoon after the death of Llewelyn, laſt Welſh prince, by his relation Madoc. Edward II. in conſideration of their misfortunes, remitted to them the payment of the taxes due to him, which before the war were levied at the rate of 12l. 10s. Theſe friars were ſtrong favourers of Owen Glendwr. Henry IV. in his firſt march againſt Owen, plundered the convent, put ſeveral of the friars to the ſword, and carried away the reſt; but afterwards ſet them at liberty, made reſtitution to the place, but peopled it with Engliſh recluſes. It poſſibly was again reduced to ruin: for Henry V. by patent, eſtabliſhes here eight friars, but directs that only two ſhould be Welſh. At the diſſolution, Henry VIII. ſold the convent and its poſſeſſions to one of his courtiers. They became in later days the property of a family of the name of *White* (now extinct), who built here a good manſion. It of late became, by purchaſe, the property of Lord Bulkeley. The church is turned into a barn, and the coffin of the princeſs Joan now ſerves for a watering trough.—A little farther is Caſtell Aber Llienawg, a ſmall ſquare fort, with the remains of a little round tower at each corner. In the middle ſtood a [illegible] ſquare tower. A [illegible] low way is carried quite to the [illegible] mity is a large mound of earth, deſigned to [illegible] landing. This caſtle was [illegible] earl of Cheſter, and Hugh the Fat earl of [illegible] bury, in 1098, when they made an invaſion, and committed more ſavage barbarities on the poor natives, eſpecially on one Kenred a prieſt, than ever ſtained the annals of any country. Providence ſent Magnus king of Norway to revenge the cruelties. His coming was to all appearance uſual. He offered to land, but was oppoſed by the earls. Magnus ſtood in the prow of his ſhip, and calling to him a moſt expert bowman, they at once directed their arrows at the earl of Shrewſbury, who ſtood all armed on the ſhore. An arrow pierced his brain through one of his eyes, the only defenceleſs part. The victor, ſeeing him ſpring up in the agonies of death, inſultingly cried out in his own language, *Leite loupe*, "Let him dance." This fort was garriſoned ſo lately as the time of Charles I. when it was kept for the parliament by Sir Thomas Cheadle; but was taken by Colonel Rowland in 1644.

Above Llanddona is a high hill, called *Bwrrd Arthur*, or Arthur's round table: the true name was probably *Din* or *Dinas Sulwy*: for a church immediately beneath bears that of *Llanchangle Din Sulwy*. On the top of it is a great Britiſh poſt, ſurrounded by a double row of rude ſtones with their ſharp points uppermoſt; and in ſome parts the ramparts are formed of ſmall ſtones. In the area are veſtiges of oval buildings; the largeſt is formed with two rows of flat ſtones ſet on end. Theſe had been the temporary habitations of the poſſeſſors. It had been a place of vaſt ſtrength: for, beſides the artificial defence, the hill ſlopes ſteeply on all ſides, and the brink next to the ramparts is moſtly precipitous. It is worth while to aſcend this hill for the ſake of the vaſt proſpect; and intermixture of ſea, rock, and alps, moſt ſavagely great.

About two miles ſouth of Plas Gwyn, the ſeat of Paul Panton, Eſq. was ſituated Penmynnydd, once the reſidence of the anceſtors of Owen Tudor, ſecond huſband to Catherine of France, queen dowager of Henry V.; "who beyng (as honeſt Halle informs us) young and luſtye, folowyng more her owne appetyte than frendely conſaill, and regardyng more her private affection than her open honour, toke to huſband privily (in 1428) a goodly gentylman, and a beautiful perſon, garniged with manye godly gyftes both of nature and of grace, called *Owen Tudder*, a man brought forth and come of the noble lignage and auncient lyne of Cadwalader, the laſt kynge of the Britonnes." The match, important in its conſequences, reſtored the Britiſh race of princes to this kingdom: Theſe reigned long, under the title of the Houſe of Tudor; the mixed race having ceaſed on the acceſſion of Henry VII. grandſon to our illuſtrious countryman. The remains of the reſidence of the Tudors are, the door of the gateway: part of the houſe, and the great chimneypiece of the hall, are to be ſeen in the preſent farm-houſe. Some coats of arms, and dates of the building or time of repairs, are to be ſeen, with the initial letters of the names of the owners. The Tudors, for a conſiderable ſpace before the extinction of their race, aſſumed the name of *Owen*. Richard

Anglesey. was the last male of the family, and was sheriff of the county in 1657. Margaret, heiress of the house, married Coningsby Williams, Esq. of Glan y gors, in this island, who possessed it during his life. It was afterwards sold to Lord Bulkeley, in whose descendant it still continues. In the church of Penmynndydd is a most magnificent monument of white alabaster, removed at the dissolution from the abbey of Llanvaes to this place; probably erected in memory of one of the House of Tudor, who had been interred there. On it is the figure of a man in complete armour, a conic helm, and mail guard down to his breast; his lady is in a thick angular hood; their feet rest on lions, and their heads are supported by angels.

On the western point of the bay is a small cape, flat at top, called *Castell Mawr*, joined to the land by a low isthmus. It is composed of limestone, which is carried to distant parts in small vessels, which lie in a small channel near the rock, and by their numbers frequently enliven the view. Roman coins have been found in this neighbourhood; but there are no vestiges of there having been any station. Beyond Castlemawr, on the shore, are vast blocks of black marble filled with shells, coralloids, and fungitæ.

At Trysclwyn mountain is the most considerable body of copper ore perhaps ever known. The part of Trysclwyn which contains it is called *Parys mountain*. Of this mountain, and the works there carried on, we have the following very curious and particular account by Mr Pennant *:—"The external aspect of the hill is extremely rude, and rises into enormous rocks of coarse white quartz. The ore is lodged in a bason, or hollow, and has on one side a small lake, on whose waters, distasteful as those of Avernus, no bird is known to alight. The whole aspect of this tract has, by the mineral operations, assumed a most savage appearance. Suffocating fumes of the burning heaps of copper arise in all parts, and extend their baneful influence for miles round. In the adjacent parts vegetation is nearly destroyed: even the mosses and lichens of the rocks have perished; and nothing seems capable of resisting the fumes but the purple melic grass, which flourishes in abundance. It is thought that the ore had been worked in a very distant period. Vestiges of the ancient operations appear in several parts, carried on by trenching, and by heating the rocks intensely, then suddenly pouring on water, so as to cause them to crack or scale; thus awkwardly supplying the use of gunpowder. Pieces of charcoal were also found, which proves that wood was made use of for that purpose. As the Britons imported all works in brass, it is certain that the Romans were the undertakers of these mines; and it is very probable that they sent the ore to Caerhen to be smelted, the place where the famous cake of copper was discovered. They might likewise have had a smelting hearth in this island; for a round cake of copper was discovered at Llanvaethlle, a few miles from this place. Its weight was fifty pounds, and it had on it a mark resembling an *L*.

* *Tour in Wales*, II. 203.

"In the year 1762, one Alexander Frazer came into Anglesey in search of mines. He visited Parys mountain; called on Sir Nicholas Bayley, and gave him so flattering an account of the prospect, as induced him to make a trial, and sink shafts. Ore was discovered; but before any quantity could be gotten, the mines were overpowered with water. In about two years after, Messrs Roe and Co. of Macclesfield applied to Sir Nicholas for a lease of Penrhyn ddu mine in Caernarvonshire; with which they were, much against their wills, compelled to take a lease of part of this mountain, and to carry on a level, and make a fair trial. The trial was accordingly made; ore was discovered; but the expences overbalanced the profits. They continued working to great loss; and at length determined to give the affair up. They gave their agent orders for that purpose: but he, as a final attempt, divided his men into ten several companies, of three or four in a partnership, and let them sink shafts in various places, about eight hundred yards eastward of a place called the *Golden Venture*, on a presumption that a spring, which issued from near the place, must come from a body of mineral. His conjecture was right; for in less than two days they met with, at the depth of seven feet from the surface, the solid mineral, which proved to be that vast body which has since been worked to such advantage. The day that this discovery was made was March 2. 1768: which has ever since been observed as a festival by the miners. Soon after this discovery, another adventure was begun by the reverend Mr Edward Hughes, owner of part of the mountain, in right of his wife Mary Lewis of Llys Dulas; so that the whole of the treasure is the property of Sir Nicholas Bayley and himself. The body of copper ore is of unknown extent. The thickness has been ascertained in some places by the driving of a level under it, several years ago, and it was found to be in some places twenty-four yards. The ore is mostly of the kind called by Cronsted, *Pyrites cupri flavo viridescens*, and contains vast quantities of sulphur. It varies in degrees of goodness; some of it is rich, but the greater part poor in quality. Anglesey.

"There are other species of copper ore found here. Of late a vein of the *Pyrites cupri griseus* of Cronsted, about seven yards wide, has been discovered near the west end of the mountain: some is of an iron gray, some quite black; the first contains sixteen lb. of copper per 100lb. the last forty. An ore has been lately found, in form of loose earth, of a dark purplish colour; and the best of it has produced better than eight in twenty. Some years ago, above thirty pounds of native copper were found in driving a level through a turbery; some was in form of moss, some in very thin leaves.

"It is quarried out of the bed in vast masses; is broken into small pieces; and the most pure part is sold raw, at the rate of about 3l. to 6l. per ton, or sent to the smelting-houses of the respective companies to be melted into metal. Mr Hughes has great furnaces of his own at Ravenhead near Liverpool, and at Swansey in South Wales. An idea of the wealth of these mines may be formed, by considering that the Macclesfield Company have had at once fourteen thousand tons of ore upon bank, and Mr Hughes thirty thousand.

"The more impure ore is also broken to the size of about hens eggs; but in order to clear it from the quantity of sulphur with which it abounds, as well as other adventitious matter, it must undergo the operation of burning. For that purpose it is placed between two parallel walls of vast length: some kilns are 20, others

40,

Anglesey. 40, and 50 yards in length; some 10, others 20, feet wide, and above four feet in height. The space between is not only filled, but the ore is piled many feet higher, in a convex form, from end to end. The whole is then covered with flat stones, closely luted with clay; and above is placed a general integument of clay, and small rubbish of the work, in order to prevent any of the fumes from evaporating. Of late, some kilns have been constructed with brick arches over the ore, which is found to be the best method of burning. Within these few years, attempts are made to preserve the sulphur from flying away; and that is done by flues made of brick whose tops are in form of a Gothic arch, many scores of feet in length. One end of these opens into the beds of copper which are to be burnt. Those beds are set on fire by a very small quantity of coal, for all the rest is effected by its own phlogiston. The volatile part is confined, and directed to the flues; in its course the sulphureous particles strike against their roofs, and fall to the bottom in form of the finest brimstone; which is collected and carried to adjacent houses, where it is melted into what is called in the shops *stone-brimstone*.

"The beds of copper, thus piled for burning, are of vast extent. Some contain 400 tons of ore, others 2000. The first require four months to be completely burnt, the last near ten. Thus burnt, it is carried to proper places to be pressed, or washed, and made merchantable. By this process the ore is reduced to a fourth part in quantity, but considerably improved in quality: and by this means the water is strongly or richly impregnated with copper, which is dissolved by the acid quality of the sulphur; and is collected or precipitated again by iron in the above-described pits. The iron is all dissolved.

"But a far richer produce of copper is discovered from the water lodged in the bottom of the bed of ore, which is highly saturated with the precious metal. This is drawn up, either by means of whimsies or windmills, to the surface, and then distributed into numbers of rectangular pits 36 feet long, some pits more some less, 12 to 15 feet broad, and 20 inches deep. To speak in the language of the adept, Venus must make an assignation with Mars, or this solution will have no effect. In plain English, a quantity of iron must be immersed in the water. The kind of iron is of no moment; old pots, hoops, anchors, or any refuse, will suffice; but of late, for the convenience of management, the adventurers procure new plates, four feet long, one and a half broad, and three quarters of an inch thick. These they immerse into the pits. The particles of copper instantly are precipitated by the iron, and the iron is gradually dissolved into a yellow ochre. Great part of it floats off by the water, and sinks to the bottom. The plates, or the old iron (as it happens), are frequently taken out, and the copper scraped off; and this is repeated till the whole of the iron is consumed. The copper thus procured differs little from native copper, and is prized accordingly, and sold for prices from 25l. to 45l. a ton.

"This discovery is far from new: it has been practised long in the Wicklow mines in Ireland; and above a century in those of Hern-grundt in Hungary, where it is called *ziment copper*. The waters of the Hungarian mines are much more strongly impregnated with copper than those of Parys mountain. The first effects its operation in 12 or about 20 days, the last requires two months. Horse shoes, iron made in shape of hearts, and other forms, are put into the foreign waters; and when perfectly transmutated, are given as presents to curious strangers.

"The ore is not got in the common manner of mining, but is cut out of the bed in the same manner as stone is out of a quarry. A hollow is now formed in the solid ore open to the day, and extends about 160 yards in length, about 40 yards in breadth, and 24 yards in depth. The ends are at present undermined, but supported by vast pillars and magnificent arches, all metallic; and these caverns meander far under ground. These will soon disappear, and thousands of tons of ore be gotten from both the columns and roofs. The sides of this vast hollow are mostly perpendicular, and access to the bottom is only to be had by small steps cut in the ore; and the curious visitor must trust to them and a rope, till he reaches some ladders, which will conduct him the rest of the descent. On the edges of the chasms are wooden platforms, which project far; on them are windlasses, by which the workmen are lowered to transact their business on the face of the precipice. There suspended, they work in mid air, pick a small place for a footing, cut out the ore in vast masses, and tumble it to the bottom with great noise. In such situations they form caverns, and there appear safely lodged till the rope is lowered to convey them up again. Much of the ore is blasted with gunpowder, eight tons of which are said to be annually used for the purpose.

"Nature hath been profuse in bestowing her mineral favours on this spot: for above the copper ore, and not more than three quarters of a yard beneath the common soil, is a bed of yellowish greasy clay, from one to four yards thick, containing lead ore, and yielding from 600 to 1000 pounds weight of lead from one ton; and one ton of the metal yields not less than 57 ounces of silver. Mixed with the earth, are frequently certain parts of the colour of cinnabar. Whether these are symptomatic of the sulphureous arsenical silver ores or of quicksilver, I will not pretend to decide. Something interferes with the successful smelting of this earth in the grate; insomuch that it has not yet been of that profit to the adventurers which might reasonably be expected from the crucible assays of it, and they have at this time about 8000 tons on bank undisposed of. This place has been worked for lead ore in very distant times. In the bottom of the pool was found an ancient smelting hearth of grit stone, and several bits of smelted lead, of about four inches in length, two in breadth, and half an inch thick.

"These works have added greatly to the population of the island; for about 1500 persons are employed; who, with their families, are supposed to make near 8000 persons, getting their bread from these mines. The little village of Amlwch, the port of the place, is increasing fast, and the market grows considerable. At the season of the greatest work, Mr Hughes's men alone receive for many weeks 200l. in one week, and 150l. in another, merely for subsistence. The port is no more than a great chasm between two rocks, running far into land, and dry at low water; into

Anglesea. into which ſloops run, and lie ſecure to receive their lading."

Near Kemlyn bay is a quarry of marble, common to this place, ſome parts of Italy, and to Corſica, and known in the ſhops by the name of *Verde di Corſica*. Its colours are green, black, white, and dull purple, irregularly diſpoſed. In different blocks one or other of the colours is frequently wanting; but among the green parts are oftener found narrow veins of a moſt elegant and ſilky white aſbeſtos. It is a compound ſpecies of marble: part is calcareous, and may be acted on by nitric acid. The green parts partake of the nature of jaſper. It is apt to be interſected by ſmall cracks, or by aſbeſtine veins, therefore incapable of taking a high poliſh. This quarry lies on the lands of Monachty, in the pariſh of Llan-Fair-Ynghornwy; and it is found again in the iſle of Skerries, off this pariſh. Neither the quarry nor the aſbeſtos are at preſent in uſe. In Rhoſcolyn pariſh, a green amianthus, or brittle aſbeſtos, is met with in great plenty in a green marble ſimilar to the above; but by reaſon of the inflexible quality of its fibres not applicable to the ſame uſe.

ANGLING, among ſportſmen, the art of fiſhing with a rod, to which are fitted a line, hook, and bait. See *Fishing-Rod*, *Fishing-Hook*, *Fishing-Fly*.

The angler's firſt buſineſs is to attract the fiſh to the place intended for angling. The method of doing this, in ſtanding waters, by throwing in grains, chopped worms, and the like, is well known: but the chief difficulty is in running rivers and brooks. The method, in this caſe, is to prepare a tin box capable of holding ſome hundreds of worms, bored on all ſides, and full of holes of ſuch a ſize as they may be juſt able to crawl out at; there muſt be a plummet faſtened to this box to ſink it, and a line to draw it back at pleaſure; in this caſe it is to be thrown into the water in a proper place, above which the angler may ſtand under cover. The worms will ſlowly and gradually crawl out of this box, and the fiſh will be gathered about to feed on them; the baited hook is to be thrown in higher up and carried down by the ſtream. If this method do not bring the fiſh about the place in a little time, there is reaſon to ſuſpect that ſome pike lies lurking thereabout, and deters them: in this caſe, it is proper to throw out a baited hook, and he will generally be taken; after this the attempt will ſucceed.

When the angler takes his ſtand, he is to ſhelter himſelf under ſome tree or buſh, or ſtand ſo far from the brink of the water that he can only diſcern his float; as the fiſh are timorous and eaſily frightened away. The angling rod muſt be kept in a moderate ſtate, neither too dry nor too moiſt: in the firſt caſe, it will be brittle; in the other, rotten. When paſtes are uſed, it is proper to mix a little tow with them, and rub them over with honey; finally, a ſmall anointing with butter is of great uſe to keep them from waſhing off the hook. The eyes of any fiſh that is taken are an excellent bait for almoſt any other kind of fiſh. The beſt way of angling with the fly is down the river, and not up; neither need the angler ever make above half a dozen of trials in one place, either with fly or ground bait, when he angles for trout: by that time the fiſh will either offer to take, or refuſe the bait and not ſtir at all.

In a pond, the beſt place for the angler to take his ſtand is uſually that where the cattle go up into water: in rivers, if breams are fiſhed for, it ſhould be in the deepeſt and moſt quiet places; if eels, under the banks of rivers that hang over; perch are to be expected in clean places, where the ſtream is ſwift; and chub in deep ſhaded holes: roach are moſtly found where the perch are, and trout only in ſwift and clear ſtreams. Places where there are many weeds, or old ſtumps of trees, harbour fiſh in great numbers, and they uſually bite freely there; but there is danger of entangling the line, or faſtening the hook to the weeds. In caſe of this accident, recourſe is to be had to a ring of lead, of about ſix inches round, faſtened to a ſmall packthread: this ring is to be thruſt over the rod, and let fall into the water. It will deſcend to the place where the hook is entangled; and then, by pulling the packthread gently, the hook will be ſoon diſengaged, or at the worſt it can only be broke off near the end of the line; whereas, when this is not employed, the rod itſelf is ſometimes broken, or the line nearer its upper end. Angling is

Deep waters are beſt for angling in, for the fiſh do not love to be diſturbed by wind and weather.

The openings of ſluices and mill dams always bring fiſh up the current to ſeek for the food which is brought with the ſtream; and angling in theſe places is uſually ſucceſsful.

The beſt ſeaſon is from April to October; for, in very cold ſtormy weather, the fiſh will not bite; the beſt times of the day are from three till nine in the morning, and from three in the afternoon till ſunſet. In an eaſterly wind, there is never much ſport for the angler; the ſoutherly winds are the beſt for his purpoſe, and a warm but lowering day is moſt of all to be choſen; a gentle wind, after a ſudden ſhower, to diſturb the water, makes a very good opportunity for the angler: the cooler the weather in the hotteſt months, the better; but in winter, on the contrary, the warmer the day the better. A cloudy day, after a bright moonlight night, is always a good day for ſport; for the fiſh do not care for going after prey in the bright moonſhine, and are therefore hungry the next morning.

Thoſe who are fond of angling might ſave themſelves ſome fruitleſs trouble by obſerving when ſmall fiſh in a jar take or refuſe food. See Fish.

The ſeveral methods of angling for ſalmon, trout, carp, tench, perch, pike, dace, gudgeons, roach, flounder, &c. may be ſeen under the article Fishing.

ANGLO-Calvinists, a name given by ſome writers to the members of the church of England, as agreeing with the other Calviniſts in moſt points except church government.

Anglo-Saxon, an appellation given to the language ſpoken by the Engliſh Saxons; in contradiſtinction from the true Saxon, as well as from the modern Engliſh.

ANGLUS, Thomas, an Engliſh prieſt, well known for the ſingularity of his opinions, and ſeveral little tracts which he wrote in the 17th century. He went by ſeveral names. Mr Baillet ſays his true name was *White*; but that he uſed to diſguiſe it under that of *Candidus*, *Albus*, *Bianchi*, and *Richworth*; but he was moſt known in France by the name of *Thomas Anglus*.

Angol, Angola.

Des Cartes generally called him Mr *Vitus*. He paſſed ſome time in moſt countries of Europe; but his longeſt ſtay was at Rome and Paris. When he was in England, he lived a conſiderable time in the family of Sir Kenelm Digby; and ſeems to have had a great eſteem for the opinions of this gentleman, as may be ſeen in his writings, particularly in the Preface to his Latin work concerning the Inſtitutions of the Peripatetic Philoſophy, according to the hypotheſis of Sir Kenelm. He was a great advocate for the Peripatetic philoſophy. He attempted even to make the principles of Ariſtotle ſubſervient to the explaining the moſt impenetrable myſteries of religion; and with this view he engaged in the diſcuſſion of predeſtination, free will, and grace. Mr Baillet ſays, "What he wrote upon this ſubject reſembles the ancient oracles for obſcurity." In ſuch abſtruſe points as we have mentioned, he was much embarraſſed; and, by giving too great ſcope to his own thoughts, he pleaſed neither the Moliniſts nor Janſeniſts. He is allowed, however, to have been a man of an extenſive and penetrating genius. On the 10th of June 1658, the congregation of the Index Expurgatorius at Rome condemned ſome treatiſes of Thomas Anglus. The doctors of Douay cenſured alſo 22 propoſitions extracted from his Sacred Inſtitutions. He publiſhed his *Supplicatio poſtulatoria juſtitiæ*, in oppoſition to their cenſure; wherein he complains that they had given him a vague undetermined cenſure, without taxing any particular propoſition. He died ſome time after the reſtoration of Charles II. but in what year is uncertain.

ANGOL, a city of Chili in South America, ſituated in W. Long. 72. 59. S. Lat. 37. 36.

ANGOLA, a kingdom on the weſtern coaſt of Africa, lying, according to the moſt probable accounts, between Lat. 8. 30. and 16. 21. S. forming a coaſt of upwards of 480 miles; but how far it extends from weſt to eaſt, has never been exactly determined. Angola Proper is bounded on the north by the river Danda, which ſeparates it from Congo; and on the ſouth by the Coanza, by which it is ſeparated from Benguela. This laſt, however, is now included in the kingdom of Angola, having been conquered by its monarchs, though it ſtill retains the name of kingdom, and is included in the dimenſions we have juſt now given. The air here is very hot and unwholeſome, and the country mountainous; there being but few plains to be met with in it, except on the ſea-coaſt, and between the huge ridges of mountains.

1 Originally a province of Congo.

That part of the kingdom which we have diſtinguiſhed by the name of *Angola Proper*, was ſubject to the kings of Congo in the year 1484, when the Portugueſe firſt diſcovered the country: but how long it had been ſo before that time, is not known; the inhabitants being utterly deſtitute of chronology, and having no other way of diſtinguiſhing paſt events, but by ſaying they happened in ſuch a king's reign. Neither, though Angola became a diſtinct kingdom ſince its diſcovery by the Portugueſe, is it known with more certainty at what time that revolution happened; or whether the Portugueſe were not concerned in aſſiſting the viceroy of the king of Congo, who governed the province of Angola, to ſet up for himſelf.

All accounts agree, that this kingdom was founded by one *Ngola* or *Angola*, from whom it took its name. According to the traditions of the country, the Ngola [illegible] was a ſmith, and the inventor of that trade, in which he had been inſtructed by the demons of the country. In conſequence of this, he became exceeding rich, [illegible] in gold, ſilver, or ſhell money, which were not at that time in uſe, but in corn, cattle, and fruits, which were then exchanged in traffic. The country being [illegible] after viſited by a grievous famine, Ngola, generouſly relieved his diſtreſſed countrymen, and ſaved the lives of ſome thouſands. In gratitude for this generoſity, he was unanimouſly choſen king: and hence the ſmith's trade is reckoned among the royal arts of Angola. [illegible] its becoming a diſtinct kingdom.

3 [illegible]

According to other accounts, which [illegible] depended upon, Ngola was the king of Congo's viceroy, who, having become powerful by the reduction of ſeveral of the neighbouring ſtates, was induced to ſet up for himſelf. Dreading, nevertheleſs, the power of his old maſter, he choſe to ſend him the uſual tribute and preſents annually, till he reckoned himſelf firmly ſeated on the throne, and had ſecured it to his deſcendants. His meaſures were greatly facilitated by the wars which the king of Congo was then engaged in with the *Giagas*, a barbarous nation in the neighbourhood. Theſe made ſuch a powerful inroad into his dominions that he was glad to aſk aſſiſtance from Ngola; not as a ſubject, but as a friend and ally. This was readily granted; and the two monarchs continued ever after ſending preſents and aſſiſtance to each other, and encouraging a mutual commerce between their ſubjects.

4 Ngola the firſt king

Ngola lived to a great age, highly reſpected by his ſubjects, and in alliance with the king of Congo and the Portugueſe, whoſe numerous ſettlements on the coaſt had made them become very powerful. According to the cuſtom of the country, he had many wives and concubines. By his chief favourite he had three daughters, *Zunda Riangola*, *Tomba Riangola*, and another whoſe name is unknown. Towards the latter part of his life, the king's chief care was to ſecure the crown to the eldeſt of theſe; for which purpoſe he conſulted his beloved queen, who encouraged him in the deſign with all the eloquence in her power. By her advice, he ſent for his lieutenant-general, a favourite ſlave, whom he had created viceroy over the whole kingdom, to acquaint him with his reſolution. The artful miniſter did not fail to applaud his deſign, though his intention was to defraud the princeſs, and ſeize the throne for himſelf. He accordingly took the opportunity, one day, when that princeſs and the whole court were employed in ſowing their lands, to ſpread a report that the Angolic enemies had entered the kingdom, and were deſtroying every thing with fire and ſword. In this confuſion, the treacherous viceroy conducted the three princeſſes to the royal palace; and acquainting Ngola with the pretended danger, urged him to betake himſelf to a ſpeedy flight. The frighted monarch, unable to ſtir with age, deſired his miniſter to take the moſt proper means for his ſafety: whereupon, being a ſtout young fellow, he takes his majeſty on his back, and carries him into a neighbouring wood; where he no ſooner had him in a convenient place, than he ſtabbed him with a dagger. This ſtratagem was too ſhallow to remain long concealed; the murderer was quickly diſcovered, and many of the nobles roſe in arms againſt him; but finding his party too ſtrong to be oppoſed, they were at laſt obliged to ſubmit, and ſuffer

5 Murdered [illegible] miniſter, [illegible]

him

Angola. him quietly to aſcend the throne, upon his publicly declaring that he had not ſeized it but with a view of ſecuring it to the princeſs Zunda Riangola.

To this princeſs the uſurper palliated his conduct in the beſt manner he could; and ſhe had art enough to diſguiſe her reſentment ſo effectually, that he never diſcovered the ſmalleſt occaſion for jealouſy. At laſt, his ſudden death gave Zunda an opportunity of aſcending the throne peaceably; when ſhe behaved with ſuch moderation and juſtice as to gain the love and affection of all her ſubjects. Her jealous temper prevented her from marrying; and, by giving too much way to it, ſhe came at laſt to dread as rivals the two ſons of her youngeſt ſiſter Tumba, and to form deſigns againſt their life. To accompliſh her purpoſes, ſhe ordered them to be brought to court, pretending to have them educated under her own eye. This was declined for ſome time; but at length the queen prevailed ſo far as to have the eldeſt ſent to her; whom ſhe no ſooner got in their power, than ſhe cauſed him to be maſſacred, with all this attendants; only one eſcaping, all covered with wounds, to carry the dreadful news to the princeſs and her huſband.

6 Death of the uſurper, who is ſucceeded by Zunda Riangola.

7 Murders her nephew.

On hearing of this bloody act, the afflicted parents immediately ſallied forth at the head of all their vaſſals. They were waited for by Queen Zunda at the head of a numerous army; but no ſooner did her ſoldiers perceive the parents of the deceaſed prince, than they immediately abandoned the queen to their reſentment. Tumba immediately ruſhed upon her ſiſter, and ſtabbed her to the heart; after which, ſhe commanded her entrails to be taken out, and thrown into the hole in which her ſon's body had been caſt. Upon this Tumba was crowned queen of Angola, and invited her huſband to participate with her in the management of public affairs. This offer he was too wiſe to accept; and Tumba, upon his refuſal, reſigned the crown into the hands of her ſurviving ſon, named *Angolo Chilvagni*. He proved a great and wiſe prince, extending his dominions by conqueſt, and gaining the love of his ſubjects by the moderation and equity of his government.

8 Is herſelf murdered by her ſiſter.

He was ſucceeded by one of his younger ſons, named *Dambi Angola*; who no ſooner aſcended the throne, than he put all his brethren to death, leſt they ſhould unite in favour of the eldeſt. The reſt of his reign proved conformable to ſuch a beginning. He was a monſter of cruelty, avarice, lewdneſs, and perfidy. Death, however, in a ſhort time, happily delivered his ſubjects from this tyrant; who, notwithſtanding his infamous life, was buried with the greateſt magnificence; and a mount was erected over his grave, conſiſting, according to the cuſtom of the country, of a prodigious number of human victims which had been ſacrificed to his ghoſt. Dambi Angola was ſucceeded by Ngola Chilivagni, a warlike and cruel prince. He conquered many nations, and made the moſt dreadful inroads into the kingdom of Congo, along the rivers of Danda, Lucalla, Zenda, and Coanza; whoſe waters were often tinged with the blood of thouſands whom he maſſacred in his excurſions. Notwithſtanding theſe butcheries, Ngola Chilivagni ſhowed ſuch generoſity to thoſe who readily ſubmitted to him, that he was ſure to conquer, not only wherever he came, but wherever he ſeemed to direct his forces. At laſt, as if weary of conqueſt, he planted a tree on the banks of the Coanza, about eight leagues from Loanda San Paulo, as a boundary to his ravages. This tree the Portugueſe called *Iſanda*, or *Iſandaura*; and afterwards erected a fortreſs near it.

9 Dambi Angola a cruel tyrant.

10 Ngola Chilivagni, his conquests.

Angola

11 Fancies himſelf a god.

The ſame folly and inſolence which took place in the breaſt of Alexander the Great, on account of his rapid conqueſts, ſoon puffed up the mind of this petty African tyrant. Becauſe he had conquered and ravaged ſome of the neighbouring countries, and brought under his ſubjection a few cowardly barbarians; he firſt fancied himſelf invincible, and then that he was a god. He demanded the ſame adoration and reſpect that was paid to their other deities; and with this demand his ſubjects were ſervile enough to comply. This pretended deity, however, was forced to ſubmit to the fate of other mortals, and died without leaving a ſucceſſor behind him.

On the deceaſe of Ngola Chilivagni, the ſtates elected Ngingha-Angola-Chilombo-Kickaſanda, great nephew to Queen Tumba's huſband, as his ſucceſſor. He proved ſuch a rapacious and cruel tyrant, that his ſubjects univerſally wiſhed for his death; which, luckily for them, ſoon happened. He was interred with the uſual pomp and ſolemnities, particularly that of having a whole hetacomb of human victims ſacrificed upon his grave. His ſon Bandi Angola, who ſucceeded him, proved yet a greater tyrant than his father; ſo that he ſoon became intolerable to his ſubjects. A general revolt enſued, in which his ſubjects called in the cannibal Giagas to their aſſiſtance. Theſe immediately poured in like a band of hungry dogs haſtening to feed upon a carcaſs; and having defeated and devoured the forces of the tyrant, beſieged him in an inacceſſible mountain; where, not being able to come at him, they reſolved to reduce him by famine. Bandi Angola applied to the king of Congo for aſſiſtance. As it was the intereſt of that prince to hinder the ravenous Giagas from entering into the Angolic dominions, whence they could ſo eaſily paſs into his own, he did not heſitate at granting his requeſt; and ordered a ſtrong reinforcement of the Portugueſe, of whoſe valour he had a high opinion, and of whom he entertained a great number at his court, to march to the aſſiſtance of the king of Angola. The command of the army was given to one of the moſt experienced Portugueſe officers; who, depending more on the handful of Europeans he had under his command than on the Congoeſe, attacked the rebels, though greatly ſuperior in number; and having utterly defeated them, reſtored the king of Angola to his throne.

12 Revolt againſt Bandi Angola.

13 Quelled by the aſſiſtance of the king of Congo and the Portugueſe.

This eſſential piece of ſervice ſo endeared the Portugueſe to Bandi Angola, that he took them into his ſervice, and even into his council. Their general became a great favourite of the king, but much more ſo of his daughter, who conceived a violent paſſion for him. Unfortunately for them both, the amour was carried on with ſo little precaution on her part, that the king quickly diſcovered it; and immediately formed a reſolution of exterminating the Portugueſe all at once. Such violent meaſures, however, could not be concerted ſo privately but the princeſs got ſome intelligence of it; and having appriſed her lover of his danger, he immediately withdrew into Congo, taking with him as many of his countrymen as he conveniently could. The king of Congo expreſſed ſuch ſtrong reſentment againſt

14 The king's daughter falls in love with the Portugueſe general;

15 who retires to Congo.

Bandi

Angola. Bandi Angola for his ingratitude, that the Portugueſe general would have probably prevailed upon him to declare war againſt Angola, had he not been obliged to defend his own dominions againſt a neighbouring prince who then made an invaſion. This afforded that general a fair pretence of aſking leave to return home; promiſing to come with ſuch reinforcements as would enable the king of Congo to revenge himſelf for the affront put upon him by the Angolic monarch. His real intention, however, was, to give the king of Portugal an opportunity of ſeizing upon the kingdom of Angola.

16 Lays a plan for the conqueſt of Angola before the king of Portugal. On his return to Liſbon, the Portugueſe general having laid his plan before the king, it was ſo well reliſhed, that an armament was ordered to be fitted out, well furniſhed with every neceſſary for building fortreſſes, &c. and a ſufficient number of men. The wind proving favourable all the way back, the Portugueſe ſoon arrived ſafe at Loanda San Paulo; whence the general diſpatched a meſſenger to acquaint the king of Congo with his arrival, and to make him ſome rich preſents. Theſe were no ſooner gone than the admiral ſailed up the Coanza; and, landing without oppoſition in the kingdom of Angola, ſet about erecting a fortreſs in a convenient ſituation, which was completed in a few days.

17 Defeats the Angolans. The king being informed of the return of the Portugueſe, and of their fortifying themſelves on advantageous ground, gathered together a numerous army: but his forces, though upwards of 100,000 in number, were utterly defeated by the Portugueſe; vaſt numbers killed, and many more carried into ſlavery. The admiral now ravaged the whole country, putting all to fire and ſword, and making himſelf maſter of every advantageous ſpot of ground. The king, however, had ſtill the good luck to eſcape all the ſtratagems that were laid for him; and once more got ſafe to his inacceſſible fortreſs.

All this time Bandi Angola had himſelf tyrannized, and allowed his favourites to tyrannize, in ſuch a manner, that his ſubjects were become no leſs weary of his government than when they formerly revolted. Being now exaſperated beyond meaſure at the calamitous war of which he had been the occaſion, they formed a deſign of putting an end to his life; and in order to draw him out of his retreat, where he wallowed in all manner of debauchery, they had recourſe to the following ſtratagem: A deputation was ſent, acquainting him with the revolt of one Cuculo Cabazzo; who, at the head of a numerous band, committed the moſt cruel ravages. They beſought his majeſty, either to levy a ſufficient number of troops, and march in perſon againſt him, or to allow them to arm themſelves againſt him. The credulous king complied with this laſt propoſal; and granted them leave to raiſe what forces might be thought neceſſary. Four days after, notice was ſent to the king, that his ſubjects had attacked the rebels, and had been repulſed with loſs; but that, if his majeſty would but condeſcend to animate them with his preſence, the fight of him would inſpire them with ſuch courage, that they would aſſuredly prove victorious. This had the deſired effect; and the king ſet out a few days after, without any other precaution than his own guards, to head his army which was encamped on the banks of the Lucalla. He no ſooner appeared in view than all the chief officers came out to meet him; and having, under pretence of paying their reſpect, gradually ſeparated him from his guards, they fell upon him and deſpatched him at once.

Angola. 18 Bandi Angola murdered.

Bandi Angola was ſucceeded by his ſon Ngola Bandi, whoſe mother had been a ſlave, and whoſe title to the crown was conſequently diſputable, according to the laws of the country. Of this the new king being well appriſed, thought proper to begin his reign by murdering every perſon who had oppoſed his election. He began with the *Tendula*, or commander of the king's rear guard; who, by his office, is the chief of the electors, and the perſon who governs the kingdom during the interregnum. Him he ordered to be put to death with all his family. Theſe were followed by the principal officers of his father's court; all his concubines, together with their parents and near relations, whom he cauſed to be butchered; together with his half-brother, his father's ſon by a favourite concubine, and then but an infant. He did not ſpare even the ſon of his ſiſter Zingha Bandi, whom ſhe had by one of her paramours. The intereſt of his ſiſter had contributed greatly to raiſe this tyrant to the throne; and his ingratitude, with the murder of her ſon, ſo exaſperated her, that ſhe ſwore to be revenged on him in the ſame way.

19 Conſults of the new king.

20 Makes war on the Portugueſe, and is reduced to great diſtreſs. The Portugueſe were the next objects of his reſentment. Theſe he ſo much dreaded on account of their valour and policy, that he immediately declared war, reſolving not to lay down his arms till he had exterminated them to the laſt man, or driven them totally out of his dominions. His raſhneſs, however, coſt him dear. Myriads of the Angolic poltroons were overthrown by a handful of Portugueſe; and the king himſelf was forced to fly, firſt into the iſland of Chiconda in the river Coanza, and then into the deſerts of Oacco. Here his conquerors, out of great clemency, allowed him to live among the wild beaſts, without any other ſuſtenance than what the deſerts afforded. He had the misfortune alſo to loſe his queen and two ſiſters Cambi and Fungi, who were taken priſoners by the Portugueſe, but honourably treated.

The king being informed of this, ſent an embaſſy to treat of their ranſom and an exchange of priſoners. The propoſal was readily agreed to; and the princeſſes were ſent back, laden with preſents. The king, however, refuſed to perform his part of the agreement, and thereby plunged himſelf into ſtill greater difficulties. A new Portugueſe viceroy being arrived about this time, Ngola was quite at a loſs how to excuſe the non-performance of his part of the treaty. At laſt he had recourſe to his exaſperated ſiſter Zingha; and having excuſed, as well as he could, the murder of her ſon, propoſed to ſend her on a ſplendid embaſſy to the viceroy. Having conſented, but without forgetting her reſentment, ſhe ſet out, as plenipotentiary for the king of Angola, with a magnificent retinue; was received with all the honour due to her rank, and lodged in a ſplendid palace prepared for her.

21 His treachery.

22 Sends his ſiſter Zingha on an embaſſy.

23 Her haughty behaviour. At the firſt audience Zingha had of Don John (the Portugueſe viceroy), ſhe was greatly ſurpriſed to find a ſtately elbow chair prepared for him to ſit upon, and for herſelf only a rich tapeſtry ſpread on the floor, with a velvet cuſhion embroidered with gold, and placed over againſt the chair of ſtate. Diſſembling her diſpleaſure, however,

Angola. however, she beckoned to one of the ladies of her retinue, commanded her to lay herself down on her elbows and knees upon the carpet, and sat herself upon her back during the whole time of the audience. She behaved with such address and dignity, as to gain the admiration of the whole council. A proposal was made of entering into an alliance offensive and defensive with the king of Angola, provided he acknowledged himself the vassal of the king of Portugal, and submitted to pay a yearly tribute. To this Zingha replied, that such conditions were indeed fit to be imposed upon those who had been conquered by the sword; but not upon a great and powerful monarch, who only sought their friendship and alliance: upon which the treaty was concluded on both sides, without any other conditions than the exchange of prisoners. The audience being over, Don John took notice to Zingha, as he conducted her out of the hall, that the lady who had served her as a seat, continued still in the same posture; upon which she replied, That it did not become the ambassadress of a great monarch to make use of the same chair twice, so she looked upon her as a piece of cast-off goods not worthy of further notice.

Zingha was so taken with the honours done her by the Portuguese, and so intent upon observing the order, dress, arms, &c. of their troops, that she staid at Loanda a considerable time; during which she was instructed in the Christian religion, and consented to be baptized. Don John and his spouse were her sponsors: who dismissed her soon after, with all possible honours, and highly satisfied with her reception and success. At her return, she took care to have the articles ratified by her brother; who expressed his approbation of them, and the highest obligations to her. He even went so far as to desire the viceroy to send him some proper persons to instruct him in the Christian religion, which he said he was very desirous of embracing. This request was immediately granted; and Don Denis de Faria, a negro priest, a native of Angola, was despatched, along with an officer of distinction, to stand godfather to the king. These met at first with a gracious reception: but when they came to talk of baptism, Ngola altered his tone, and told them it was too much below his dignity to receive it from the son of one of his slaves, and sent them both back. This was cried up by the courtiers as a princely act: but Zingha represented, that it could not fail to exasperate the viceroy; and tried all possible means to dissuade him from it, but in vain. He suffered, however, his other two sisters, Cambi and Fungi, to be baptized; which was performed in 1625, with a splendour suited to their dignity.

24 Embraces the Christian religion.

25 War again[illegible] [illegible] against the Portuguese.

As no experience seems to have been a sufficient antidote against the innate folly of Ngola Bandi, he soon after took it into his head to make war on the Portuguese, and invaded some of their territories. This last act on proved his ruin: his troops were all cut off, and himself forced to swim for his life to a small island in the Coanza, about a mile long, and two bow-shots in breadth; whither the Portuguese pursued and surrounded him; so that he had no other chance, but either to fall into their hands, or be devoured by the wild beasts with which the place swarmed. From both these dangers he was relieved by a dose of poison, given him, as was supposed, by his sister Zingha. Before this

26 His [illegible] [illegible].

time, however, he had taken care to send his eldest son to the country of the Giagas, and put him under the care of one of their chiefs, called *Giaga Caza*, whom he besought to take care of him, and protect him from his aunt Zingha, as he rightly imagined she would not fail of attempting his life, in order to secure herself on the throne. Angola.

27 Zingha Bandi crowned queen.

Zingha Bandi was crowned queen of Angola, without opposition, in 1627.—She was a very artful woman, endowed with great presence of mind, firm in her resolutions, of an intrepid courage, and a great mistress in the art of dissimulation. She inherited a large share of her brother's jealous and cruel temper, to which she would not hesitate to sacrifice her nearest relations, if they gave her the least umbrage.—To this jealousy, therefore, she resolved to sacrifice her nephew, as well knowing he had a better title to the crown than herself. She made use of the most solemn oaths to draw him out of the hands of his guardian, protesting that she had accepted of the throne with no other view than to preserve it for him. But Giaga, being well acquainted with her temper, was proof against all her oaths and fair speeches.—Zingha, finding this method ineffectual, pretended a desire of resigning the crown to her nephew, to which she said she had no other objection, than that she was afraid he was yet incapable of assuming the reins of government. She therefore desired an interview with him, though ever so short, that she might satisfy herself in this particular, and promised to detain him no longer than Giaga should think necessary. Giaga thought there could be no danger in consenting to a short interview; and therefore sent the unfortunate prince to her, attended by a magnificent retinue. The cruel queen no sooner got him in her power, than she murdered him with her own hand, and caused his body to be thrown into the Coanza, ridding herself, by that inhuman act, of a dangerous rival, as well as revenging herself on her brother, as she had sworn to do, for the murder of her son.

28 She murders her nephew.

Zingha's next scheme was to rid herself of the Portuguese, who had established themselves in such a manner as to be almost entire masters of the country. They had built fortresses on every convenient spot that suited them, especially near her principal towns, which they could level with the ground with the greatest ease. They had engrossed all her commerce, were become very wealthy, and their numbers increased daily; so that they were dreaded not only by her subjects, but by all the neighbouring nations. As Zingha was of a martial temper, she did not long hesitate. She quickly made all necessary provisions, strengthened herself by alliances with the Giagas, and other idolatrous nations, and even with the Dutch and the king of Congo. With this combined force she attacked the Portuguese so suddenly and unexpectedly, that she gained some advantages over them: and the Dutch made themselves masters of San Paulo de Loando, and soon after of some of the best provinces in the kingdom. This happened in the year 1641; and the Portuguese did not recover these places till the year 1648, when the Dutch were entirely driven out of Angola.

29 Declares war against the Portuguese.

Zingha's successes proved still more short-lived. Her allies the Congoese were so completely overthrown, that they were forced to sue for peace; which the Portuguese did not grant till they had obtained a sufficient

30 Her bad success.

Angola. ficient number of hoſtages, and obliged the Congoeſe to deliver up to them ſome conſiderable poſts, upon which they immediately erected fortreſſes. Zingha's troops were now defeated in every battle; and theſe defeats followed one another ſo cloſe, that ſhe was ſoon abandoned, not only by her allies, but by her own troops. She was now conſtrained to abandon her dominions, and retire to ſome of the eaſtern deſerts, whither the Portugueſe did not think it worth while to follow her.

Zingha being reduced to ſuch diſtreſs, the Portugueſe, after giving her ſome time to ruminate on her ſituation, ſent her propoſals of peace, upon condition that ſhe ſhould become tributary to the crown of Portugal. This propoſal ſhe rejected with ſcorn; and let them know, that, however her daſtardly ſubjects might ſubmiſſively and ſhamefully behave towards them, their queen diſdained ſubjection to any foreign power. On this haughty anſwer the Portugueſe, to mortify her ſtill more, ſet up a king in her place. The perſon they pitched upon was named *Angola Oarij*, or *Aaru*, who was of the royal family. Before he was crowned, the Portugueſe obliged him to turn Chriſtian; and he was accordingly baptized by the name of John. The new king, however, ſoon died of grief, at ſeeing himſelf ſo hardly treated by his maſters the Portugueſe. They quickly ſet up another, named *Philip*; who bore the yoke with more patience, and lived to the year 1660.

31 Refuſes to become tributary to them.

32 They ſet up a king.

33 Zingha's apoſtaſy and horrid barbarity.

In the mean time Zingha, exaſperated at ſeeing herſelf deprived of eleven of the beſt provinces in her dominions, and her authority in the remaining ſix greatly weakened, renounced the Chriſtian religion, and embraced all the horrid and bloody cuſtoms of the Giagas, whom ſhe outdid even in their own barbarity. —We have already hinted the barbarity of this nation in eating human fleſh. In this Zingha not only joined them, but took pleaſure in devouring the raw fleſh of human victims, and drinking their blood while warm both at her ſacrifices and at her public meals.—She affected a martial and heroic ſpirit, together with an utter averſion to the male ſex; but, according to the Portugueſe, maintained a number of the ſtrongeſt and luſtieſt youths, in whoſe embraces ſhe gave a full ſcope to her inclinations, and managed matters with ſuch ſecrecy that her intrigues could never be diſcovered. At the ſame time ſhe ordered many of her own ſex to be ripped up, when their incontinency was manifeſted by their pregnancy; and their bodies with thoſe of the infants to be caſt to wild beaſts.

But what made her moſt admired, as well as dreaded, by her ſubjects, was a notion that ſhe had by various ſtratagems inculcated upon them, of her being able to penetrate into the moſt ſecret thoughts. To keep up this apprehenſion ſhe ordered the bones of her deceaſed brother to be brought from the iſland where he was poiſoned, locked up in a cheſt covered with coarſe plates of ſilver, and laid on a fine carpet upon a pedeſtal. A number of ſinghillos or prieſts were ordered to offer ſacrifices to theſe bones, and to keep lamps continually burning before them. To this place ſhe herſelf frequently repaired, to aſſiſt at thoſe rites, which, as ſhe gave out, and every body believed, engaged the ſpirit of the deceaſed to inform her of every thing that was done, ſaid, or even deſigned, either in the kingdom or out of it.—To procure, however, as much real intelligence as poſſible, ſhe kept vaſt numbers of ſpies all over the kingdom, who conſtantly gave her notice of what happened in their reſpective circles; and this ſhe ſo cunningly improved to her own end, that her ſubjects looked upon her as a kind of deity from whom nothing could be concealed.

34 Her authority over the Giagas.

By ſuch means as theſe, Zingha gained ſuch authority over the Giagas, that they were ready, at the very leaſt firſt indication of her will, to follow her through the moſt dreadful dangers, and to engage in the moſt deſperate enterpriſes. She now made many ſtrenuous and daring efforts to drive out the Portugueſe; but though ſhe had, in all probability, more valour and ſkill than her enemies, their fire arms gave them ſuch an advantage, that ſhe was always defeated with great loſs. Perceiving therefore the folly of attempts of this kind, ſhe contented herſelf with making continual inroads into their country, carrying off or deſtroying every thing that fell in her way. Though ſhe ſpared neither Europeans, nor blacks, who were ſubjects of the mock monarchs ſet up by the Portugueſe, yet the caſe of the former was peculiarly dreadful when they happened to be taken priſoners. They were either roaſted by a ſlow fire, or had their fleſh cut off in pieces, and devoured before their faces, in the manner related by Mr Bruce of the Abyſſinian oxen *. In this manner ſhe infeſted the Portugueſe territories for 28 years, ſcarce ever allowing them a moment's ceſſation of arms. Their mock-kings were often obliged to ſhelter themſelves from her fury in an inacceſſible rock called *Maopongo*; and they themſelves could never hope to enjoy their dominions with any kind of peace ſo long as this furious queen continued alive. They in vain exhauſted all their politics either to reduce her by force, or to mollify her by preſents and fair offers. The one ſhe rejected with diſdain, and always found means to baffle the other. Nor would ſhe hearken to any terms, unleſs they conſented to reſign all their conqueſts. The refuſal of this demand was ſo commonly followed by ſome marks of her reſentment, that it was with the utmoſt difficulty the Portugueſe could prevail on any body to carry their propoſals to her; and as for Zingha, ſhe diſdained to make any to them, except thoſe of the hoſtile kind. The terror of her arms procured her a free paſſage wherever ſhe directed her courſe; all the inhabitants of a province making no leſs haſte to abandon, than ſhe to invade it. Thus ſhe continued to advance, till at length ſhe was got ſo far as the ſmall iſland of Dangii in the river Coanza. The Portugueſe now found themſelves under the neceſſity of raiſing an army of negroes, in order to drive her out of it. Accordingly they ſurrounded the iſland and intrenched themſelves along the banks on both ſides of the river; but while they were buſy at their work, Zingha attacked them with ſuch advantage, that ſhe killed and wounded ſeveral hundreds of the blacks, and ſome of the white men. Elated with this advantage, ſhe was preparing for another attack; when ſhe perceived, to her ſurpriſe, that the Portugueſe had drawn their lines ſo cloſe, and raiſed them to ſuch a height, that they overlooked her whole camp, and could fire upon her naked ſoldiers as if they ſhot at a mark.—Thus great numbers of her men were cut off, particularly her chief officers. The queen, now perceiving the

35 Her terrible ravages.

* See *Abyſſinia*.

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danger of her ſituation, amuſed the Portugueſe with propoſals of an accommodation; and having obtained a truce for three days, croſſed the river in the dead of the night, and led her forces to the province of Oacco. The next morning, the Portugueſe, ſeeing no human creature upon the iſland, began to apprehend ſome new ſtratagem; but, upon landing ſome of their troops, they perceived themſelves over-reached, and deprived of the faireſt opportunity they ever had of forcing her to ſurrender at diſcretion.

36 Outwits the Portugueſe.

Zingha ſtaid no longer in that province whither ſhe had retired, than till ſhe was aſſured that the Portugueſe were retired from the Coanza; and then, croſſing that river once more, marched directly towards the kingdom of Metamba, which had been invaded by ſome of the neighbouring princes. The ſpeed with which ſhe led her forces thither, and recruited her army with multitudes of Giagas, who were all emulous of fighting under her banner, quickly enabled her to recover ſome of her territories in that kingdom. Beginning now to think herſelf ſucceſsful, ſhe again attacked the Portugueſe; but was defeated with great loſs, ſo as to be obliged to ſend for freſh troops. To complete her misfortune, ſhe received news that the Giaga Caſſangi had taken the advantage of her abſence, to enter the kingdom of Metamba with a numerous army, had carried off the greateſt part of the inhabitants, deſtroyed all the fruits of the earth, plundered the towns of all that was valuable, and ſet fire to the reſt, leaving that kingdom in a manner deſolate. To add to all this, her troops, exaſperated at the loſs of their wives, children, and goods, which were carried to the fartheſt corner of Benguela, were all on the point of revolting.

37 Her complicated misfortunes.

38 The Portugueſe ſend an embaſſy to her.

Notwithſtanding theſe diſaſters, Zingha behaved with ſuch reſolution and addreſs, that the Portugueſe, who, according to character, had probably inſtigated the Giaga againſt her, were ſo much afraid of her joining with him in alliance againſt them, that they deſpatched one Anthony Coglio, a learned prieſt and an excellent negotiator, with Don Gaſpar Borgia an eminent officer, under pretence of negotiating a peace between them, firſt to the Giaga, and afterwards to the queen. They met with a very civil reception from the firſt, who told them that he was very willing to live at peace with that princeſs, and even to let her enjoy the kingdom of Metamba, though he was the rightful heir to it, provided ſhe would lay down her arms. This anſwer encouraged the prieſt to try whether he could prevail on him to embrace the Chriſtian religion; but that was declined by the Giaga in ſuch ſtrong terms, that the prieſt thought proper to deſiſt, and ſet out for Zingha's camp.

39 Their propoſals rejected.

The ambaſſadors, at their firſt arrival, met with ſuch a polite reception, as made them hope for ſucceſs; but after ſhe had heard their propoſals, ſhe aſſumed a haughty threatening tone, and told them in the concluſion of her ſpeech, "That it did not become her dignity to lay down her arms, till ſhe had brought the war ſhe had begun to an honourable concluſion: that as to the Giagas, whoſe ſect ſhe had embraced ſome years before, and who had furniſhed her with ſuch a prodigious number of forces to fight in her defence, her honour and intereſt required that ſhe ſhould ſtill keep them in her ſervice, and under her protection: and laſtly, that as to herſelf, ſhe remembered, indeed, that ſhe had formerly embraced Chriſtianity; but that it was not now a proper ſeaſon to propoſe her returning to it, and they ought to remember that they themſelves were the cauſe of her abandoning it."

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Borgia, perceiving that ſhe was not to be wrought upon by religious motives, ſhifted the topic; and told her, that ſhe had gained honour enough in war, and that it was now high time to think of granting peace and tranquillity to the ſubjects of two ſuch powerful kingdoms, and accept of the favour and friendſhip of the king of Portugal, which was offered her by his viceroy. To this the queen made anſwer, that ſhe was perfectly well acquainted with the valour and ſtrength of the Portugueſe, and ſhould eſteem it an honour to be allied to that monarch; but that ſhe thought it juſt that their reſpective claims to the dominions which ſhe juſtly inherited from her anceſtors, and of which he had unjuſtly deprived her, ſhould firſt of all be decided, either by the ſword or by ſome equitable judges.

Borgia, vainly imagining that he had now obtained enough, ſet off immediately for Loanda San Paulo; but left the prieſt, on ſome pretence or other, to ſee whether, in the time of ſickneſs, he could make any impreſſion on the inflexible mind of Zinga, who now laboured under a lingering diſeaſe. Coglio, however, found all his arts to no purpoſe; and, upon the queen's recovery, ſhe recommenced the war with more fury than ever.

40 Zingha's narrow eſcape.

For ſome time hoſtilities were carried on with various ſucceſs; Zingha being ſometimes victorious and ſometimes defeated. In one attempt of the latter kind, before the fortreſs of Maſſangana, ſhe not only loſt a great number of men, but had her two ſiſters Cambi and Fungi taken priſoners, ſhe herſelf eſcaping with the utmoſt difficulty. Exaſperated by this loſs, ſhe led her troops into ſome of the beſt provinces of the Portugueſe, and reduced them to a mere wilderneſs. Still, however, ſhe had the mortification to find her loſſes vaſtly greater than what ſhe gained; and had now the additional misfortune of loſing her ſiſter Fungi, who was put to death by the Portugueſe for treachery, and ſeeing her allies the Dutch totally expelled out of Angola.

41 Begins to relent;

Zingha being thus oppreſſed with a complication of misfortunes, and conſcious of the crimes ſhe had committed, began ſeriouſly to conſider whether ſuch a continued ſeries of diſaſters was not owing to the diſpleaſure of the God of the Chriſtians. To this opinion ſhe ſeemed to have inclined; and therefore began to treat with more lenity ſuch Chriſtians as fell into her hands, eſpecially if they happened to be prieſts or monks. To theſe ſhe now began to liſten with ſome attention; and ordered them, under ſevere penalties, to be treated with all poſſible reſpect; yet without loſing in the leaſt that invincible hatred ſhe had conceived againſt thoſe who had ſtripped her of her dominions, or dropping her reſolution never to make peace till ſhe had recovered them.

42 but ſtill reſiſts the artifices of the Portugueſe,

The viceroy, Don Salvador Correa, who had driven out the Dutch, being appriſed of the regard ſhown to the clergy by Queen Zingha, thought proper to ſend ſome capuchins to her, in hopes that they might now find her more tractable. But Zingha was ſtill proof againſt

Angola. against their utmoſt art; obſerving, however, that if they would conſent to reſtore what they had unjuſtly taken from her, ſhe would not only return to the Chriſtian religion, but encourage it to the utmoſt of her power.

The viceroy, being now afraid that Zingha might make an alliance againſt him with the king of Congo, firſt raiſed a powerful army, and then acquainted that monarch, that, if he deſigned to prevent the total ruin of his dominions, he muſt immediately make reparation for all the damage he had cauſed to the Portugueſe by his alliance with the Dutch. The fame of the Portugueſe valour ſo intimidated the king, that he ſubmitted to a treaty almoſt on the viceroy's own terms; and as ſoon as this treaty was concluded, Don Ruy Pegado, an old experienced officer, was deſpatched to Zingha, offering a firm and laſting alliance with her, provided ſhe renounced the Giagan ſect, and returned to the boſom of the church. To this embaſſy ſhe returned the old anſwer, namely, that the Portugueſe themſelves had been the occaſion of all that had happened; as they had not only ſtripped her of her hereditary dominions, but dared to proclaim one of her vaſſals king of Angola; but, provided theſe dominions were reſtored, ſhe would immediately embrace Chriſtianity.

43 Their infamous conduct. All this time the furious Queen Zingha went on with her ravages notwithſtanding the viceroy kept plying her with letters for near three years. At laſt he had recourſe to the artifice of taking advantage of the remorſe for her crimes with which Zingha was ſometimes affected, in order to procure the peaceable enjoyment of his own ill-gotten conqueſts.

It is eaſy to ſee, that had this viceroy, or the prieſts he employed, really intended to convert Zingha to Chriſtianity, they ought to have ſo far ſet her an example, as at leaſt to abandon part of the countries of which they had robbed her: but, inſtead of this, they impiouſly made uſe of the ſacred name of our Saviour, in order to deter a poor ſavage African from recovering what juſtly belonged to her.

44 She returns to Chriſtianity. Queen Zingha, at laſt, came to incline ſo much to return to the Chriſtian religion, that a general murmur ran through her army. But having, by various artifices, reconciled the minds of her ſubjects to this event, ſhe explained her deſign in a ſet ſpeech; offering at the ſame time liberty to thoſe who choſe to abandon her on this account to go where they would; and ſuch was their attachment to her, that even on ſuch a ſudden and important change in her reſolutions they expreſſed no uneaſineſs, but on the contrary applauded her to the higheſt degree.

The Portugueſe, after having been haraſſed in a terrible manner for 28 years, and at laſt obliged to profane the name of their Saviour to procure a peace, began now freely to enjoy the fruits of their villany. A

45 Treaty with the Portugueſe propoſed. treaty was ſet on foot between the viceroy and Zingha; which, however, was not eaſily concluded. She demanded the releaſe of her ſiſter Cambi, whoſe Chriſtian name was Donna Barbara; and the Portugueſe demanded a ranſom of 200 ſlaves or an equivalent in money. This Zingha did not well reliſh; and, being preſſed to a compliance, threatened them with a more furious war than any they had yet experienced. Upon this the viceroy was obliged to have recourſe to the uſual method of ſending prieſts to perſuade her to comply through motives of religion. Theſe hypocrites effected their purpoſe; and the ſlaves were ſent, as if Chriſtianity required the delivering up innocent people to thoſe who had no lawful authority over them: but not being able to conclude a laſting peace about the ceſſion of the Angolic provinces, they were forced to conclude a ſhort truce, and ſent back her ſiſter. Angola.

This princeſs was received by Zingha in a very affectionate manner: and, ſome time after, the queen, her mind being probably weakened through the infirmities of old age, not only was thoroughly reconciled to the Portugueſe, but looked upon them as her beſt friends. She encouraged the Chriſtian religion; had a church built in her capital; made ſeveral laws againſt Paganiſm; and, *to encourage marriage*, ſhe herſelf wedded a handſome young fellow in the 75th year of her age.

The Portugueſe now imagining they would at laſt gain their point, propoſed to her the following terms, as the baſis of a laſting treaty between the two nations. 46 The Portugueſe terms. 1. "That they ſhould yield to her, *as a preſent*, ſome of the countries of which they had already robbed her. 2. That, in conſideration of the ſaid preſent, which ſhould in noways be interpreted as an inveſtiture, the queen ſhould pay yearly a certain acknowledgement to the king of Portugal, who ſhould be at liberty to withdraw the ſaid preſent whenever ſhe failed of making the ſaid acknowledgement. 3. That a free commerce ſhould be opened between thoſe two ſtates, as well for ſlaves as for other merchandiſes. 4. That the queen ſhould moleſt none of the lords that were feudatory to the Portugueſe, whatever damages or ravages they might have committed during the late wars between them. 5. That ſhe ſhould reſtore all the Portugueſe ſlaves that had taken refuge in her dominions. 6. That ſhe ſhould deliver up the Giaga Colanda, who had revolted from the Portugueſe, upon condition that his crime ſhould go unpuniſhed."

The queen, having now a thorough view of the deep-rooted villany of thoſe with whom ſhe had to do, conceived ſuch diſpleaſure againſt the Portugueſe, that ſhe fell ſick. During this ſickneſs, Father Anthony, her chief confidant, and a creature of the viceroy, never left off ſoliciting her to make her peace with God, and to accept of the terms offered her by the Portugueſe: but Zingha, though worn out with age and ſickneſs, had ſtill the good ſenſe to perceive, that there was no connexion between making her peace with God and complying with ſuch infamous terms; and therefore gave the following anſwer, which, under ſuch circumſtances, ſhows a magnanimity ſcarce equalled in any 47 The queen's anſwer. age or in any country. 1. "That as to her converſion, at it was neither owing to any deſire of obtaining a peace, or other worldly motives, but the Divine grace by which ſhe was recalled, ſhe was reſolved to perſevere in it to her laſt breath. 2. That as to her going over to the Giagan ſect, ſhe had in a great meaſure been forced to it by the Portugueſe viceroy. 3. That the king of Portugal would do a generous act in reſtoring ſome of her Angolic dominions; but it would be more ſo, were he to reſtore them all. 4. That as to her paying homage to him, neither her mind nor heart were baſe enough to conſent to it; and that as ſhe had refuſed the propoſal while ſhe lived among the Giagas, much more did ſhe think herſelf

above

Angola. above it now she was a Christian queen, and owed neither tribute nor homage to any but to the Supreme Power, from whom she had received both her being and her kingdom: That, nevertheless, if she could be convinced that there was any thing in her dominions that would be acceptable to his Portuguese majesty, she would voluntarily make him a present of it; and as to the rest of the articles, such was her desire of making a firm and lasting peace with them, that she should make no difficulty of consenting to them."

This answer was not altogether satisfactory to the viceroy; but the priest, finding it impossible to make any impression upon her mind, easily prevailed upon him to consent to the following terms: 1. "That the river Lucalla should be the boundary between the dominions of the Portuguese and of Queen Zingha. 2. That neither side should thenceforth give any reception to the fugitive slaves of the other, but send them back without any delay, together with the prisoners which had been taken during the last year. 3. That the queen should remain wholly free and exempt from all tribute and homage whatever, provided she agreed to the other articles."

48 Articles of the treaty.

49 The peace signed.

These terms were at last signed by the queen and viceroy in the month of April 1657, and ratified by the king of Portugal in the month of November the same year.—The only difficulty the queen had concerning this treaty was with regard to the Giaga Colanda: and the manner in which she extricated herself from it, with her subsequent behaviour, cannot fail to give us a high idea of the mental abilities of this African heroine.

50 Zingha's honourable behaviour.

This Giagan chief, weary of the Portuguese yoke, had retired from them, at the head of 1000 stout soldiers, and a much greater number of slaves, some leagues beyond the river Lucalla, and put himself under the queen's protection. This she readily granted, as he was very able to be serviceable to her in case the perfidious conduct of the Portuguese should oblige her to renew the war. She could not therefore but look upon it as unjust and dishonourable, to deliver up a brave chief who had devoted himself to her service, and whom she had taken under her special protection, to a nation with whose perfidy she was so well acquainted. To save her honour, therefore, some time before the ratification of the treaty, she sent privately for the Giaga, and aquainted him with the demand of the Portuguese; telling him, at the same time, that though she doubted not of the viceroy's keeping his word, and forgiving his offence, yet she advised him to go out of her dominions, and settle himself and his men in some country distant from the Portuguese frontiers; but forbade him, on pain of her highest displeasure, to commit the least outrage or hostility within their dominions.

The Giaga thanked her majesty, and seemed to acquiesce with her advice, but did not follow it. On the contrary, he had no sooner reached his fortress, than he set himself about fortifying it in such a manner as looked rather like defiance than defence: and, having gathered a considerable army, soon spread a general terror around him. Of this the Portuguese failed not to complain to the queen: who immediately marched against him, surprised and defeated his army; and he himself being killed in the action, his head was cut off and sent to the Portuguese. Angola

51 Defeats and kills the Giaga Colanda.

This was among the last memorable actions performed by this famous queen; who, now finding herself unfit for the fatigues of war, contented herself (in 1658) with despatching an old experienced general against a neighbouring prince who had invaded her territories. He proved no less successful than herself, and quickly forced the aggressor to submit to her terms. She now gave herself up to study the best method of propagating Christianity among her subjects; and for this purpose sent a solemn embassy to Rome, to pay homage to the Pope in her name, and to request a fresh supply of missionaries. To this letter she received an answer from his Holiness in 1662; and it was read in the church, that same year, in the most public and solemn manner. The day appointed was the 15th of July; on which she repaired to the church at the head of a numerous retinue, and having the letter hanging about her neck in a purse made of cloth of gold. The concourse was so great, that the church could not contain one half of the people, so that none were admitted but persons of rank. The father having finished the mass, read the letter at the altar in the Portugueſe language; and the secretary interpreted it in that of the country. The queen, who had stood all the while it was reading, went towards the altar, and on her knees received it from the father; and, having kissed it, and sworn afresh upon the gospel to continue in obedience to the church of Rome, kissed the letter again, put it into the purse, and returned to the palace amidst the shouts and acclamations of many thousands of her subjects. On that day she gave a magnificent treat to the Portuguese resident, and to all her court, in two great porticos, and she herself vouchsafed to eat after the European manner; that is, sitting on a stately elbow chair, with a high table before her, covered with the finest linen, and with dishes, plates, knives, and forks, all of silver gilt. She bestowed some largesses upon her chief officers, released a good number of slaves, and at night appeared at the head of her ladies of honour, both she and they dressed in the Amazonian manner. They performed a kind of combat, in which the queen, though upwards of eighty years of age, behaved with all the vigour and activity of a woman of thirty.

52 Encourages Christianity.

53 Ceremonies at receiving a letter from the pope.

Her life, however, was not lengthened in proportion to her vigour and activity; for in the month of September she was seized with an inflammation in her throat; which, in December, having seized her breast and lungs, she expired on the 17th of that month, and was succeeded by her sister Barbara.

54 Zingha dies.

The deceased queen was buried with extraordinary pomp; and out of regard to her, Barbara was inaugurated a second and third time, with the greatest pomp, and the most joyful acclamations. She was a very zealous Christian, but wanted her sister's abilities, and had the misfortune of being in the decline of life, lame, and almost blind. Besides this, she had been married to a proud ill-natured husband, named Mona Zingha; who, though to her he owed all his fortune and advancement, being himself no more than the son of a slave, used her with such cruelty, even in the late queen's life, that she was obliged to take refuge in the palace, from whence he had the insolence immediately to her.

55 Succeeded by her sister Barbara.

56 Cruelty of her husband Mona Zingha to

Angola. to fetch her. This ſo exaſperated Queen Zingha, that ſhe had well nigh ordered him to be cut in pieces before her face; but pardoned him at the requeſt of Father Anthony, who probably knew he was privy to ſome religious ſecrets which he might, in caſe of ſuch emergency, have diſcloſed. On Barbara's acceſſion to the throne, however, he not only redoubled his cruelty to her, in hopes of getting the management of affairs entirely into his own hands, but invented accuſations againſt Anthony himſelf, with a deſign to extirpate both him and his religion. He gave out that the late queen had been poiſoned by ſome favourite European diſhes, with which Brother Ignatio uſed to regale her during her laſt illneſs; and attributed his wife's lameneſs and blindneſs to ſome ſorceries or charms uſed by the convent againſt her. He had even perſuaded, or rather forced, his queen to conſent that ſome of the ſinghillos or prieſts ſhould be brought to counter-charm her diſtemper.

57 He accuſes Father Anthony:

58 who reprimands the queen.

Father Anthony, far from being intimidated at the accuſations brought againſt him, repaired immediately to the palace; where he boldly reprimanded the queen for giving ear to theſe jugglers, threatening at the ſame time to leave her dominions, and carry off with him all the croſſes, and other religious utenſils, from which alone they could have any benefit. The queen returned a very ſubmiſſive anſwer; and promiſed to deliver up the counter-charms which ſhe at that time had upon her, before ſunſet; which ſhe accordingly did, and ſent them to the convent by the hands of her ſecretary. This ſo exaſperated her huſband, and all the Giagan ſect, that they reſolved upon the deſtruction of all the prieſts and Europeans, and even the queen herſelf. This, however, was found improper to be attempted; and Mona Zingha was ſo much chagrined at his diſappointment, that he retired to his own eſtate; giving out, that he deſigned to meddle no more with ſtate affairs; but, in reality, to concert meaſures for engroſſing the ſovereignty to himſelf, and to deprive his wife of her life and crown.

To accompliſh his purpoſe, he ſent a meſſenger to her, deſiring her to repair to his houſe, where he had ſomething of importance to communicate; but ſhe declining the invitation by the advice of Father Anthony, he found himſelf diſappointed, and begged leave to retire to a neighbouring province, which was under his government. He was again diſappointed, and forbid to ſtir out of the province of Metamba. The queen was, however, guilty of an error not long after, in ſending Mona Zingha, at the head of an army, to

59 Mona Zingha revives the Giagan rites;

quell a revolt on the frontiers. On his returning victorious, he thought himſelf ſtrong enough to revive the ancient Giagan rites, and therefore ordered 100 ſlaves to be ſacrificed to the manes of the deceaſed queen. Though the queen was immediately appriſed of his intention, and diſpatched a meſſenger expreſsly commanding him to deſiſt; yet Mona, by diſtributing ſome preſents, particularly ſome European wines, among the counſellors, effected his purpoſe with impunity. He did not forget to ſend ſome of this wine to Father Anthony:

60 and poiſons Father Anthony.

but to prevent ſuſpicion, preſented him only with a ſmall quantity, to be uſed, as he ſaid, at the maſs; adding, that if it proved agreeable, he would ſupply him with a larger quantity. The unſuſpecting prieſt drank about two glaſſes of it; and in about a quarter of an hour was ſeized with violent convulſions in his bowels, and other ſymptoms of being poiſoned. By proper aſſiſtance, however, he recovered: yet ſo far was he diſabled by this dote, that he was obliged to abandon his miſſion.

Angola.

61

The queen's infirmities in the mean time daily increaſing, Mona Zingha was ſoon delivered from all further oppoſition on her part, by her death, which happened on the 24th of March 1666. Upon this, Mona Zingha made all poſſible haſte to get herſelf elected king; and immediately renounced the Chriſtian religion, raiſing a perſecution at the ſame time againſt its profeſſors. He even wrote to the Portugueſe viceroy, acquainting him with his having renounced Chriſtianity, which he had only embraced out of complaiſance to his queen, and with his deſign to revive the Giagan rites.

62 Cruelties of Mona Zingha.

To ſhow that he meant to be as good as his word, he ordered all the children under ſix years of age, that could be found, to be ſacrificed in honour of their infernal deities. He alſo recalled the ſinghillos, and heaped many favours upon them; ſo that they became entirely devoted to his purpoſes. He likewiſe cauſed many of his ſubjects to be privately poiſoned; and then gave out, that their unaccountable deaths were owing to their having abandoned the religion of their anceſtors, and embraced Chriſtianity; which he ſtyled the religion of a parcel of famiſhed ſtrangers, who through their extreme miſery, had been forced to leave their native country, and ſeek for a livelihood in the richeſt provinces of Africa.

By theſe and ſuch like ſtratagems he almoſt entirely extirpated Chriſtianity, and any appearances of civilization which had been introduced among his ſubjects. His career, however, was ſtopped by Don John the princeſs Barbara's firſt huſband, from whom ſhe had been divorced on account of his having another wife. He ſoon compelled the uſurper to fly into an iſland in the Coanza; but not having the precaution to reduce him entirely, Mona Zingha found means to retrieve his affairs, and at laſt defeated and killed Don John himſelf, by which he became maſter of the throne without any further oppoſition. He was no ſooner re-eſtabliſhed, than he began to purſue his butcheries with more fury than ever; when, on a ſudden, Don Franciſco, the ſon of Don John, appeared at the head of an army in oppoſition to the uſurper; and in the firſt engage-

63 He is defeated and killed.

ment Mona Zingha being defeated and killed, Don Franciſco became ſole maſter of the empire.

It is not known whether this prince kept to the terms of the alliance made by Queen Zingha with the Portugueſe or not. Theſe, however, have preſerved their conqueſts, and for ſome time they allowed the natives to chooſe a king for themſelves, or rather they choſe him for them, as we have already noticed. Theſe kings enjoyed only a mere ſhadow of royalty; their whole grandeur conſiſting in being allowed to breed peacocks, and adorn themſelves with their feathers, which was forbidden to their ſubjects under pain of perpetual ſlavery. The laſt of theſe kings was named Ngola Sedeño, who, diſliking an empty name of royalty, revolted from the Portugueſe, and carried on a long war with them; but being at laſt defeated and killed, his head was cut off, ſalted, and ſent to Lisbon in pickle. After this the Portugueſe ſeem not to have thought it ſafe to truſt their Angolic ſubjects even with

64 Low ſtate of the kings ſet up by the Portugueſe.

Angola. Angon

the name of a king of their own, but have veſted the power entirely in their viceroy; but, as to the extent of his dominions, and how matters ſtand between him and that race of Angolic princes who have preſerved their liberty, we are entirely in the dark.

65 Diviſion into provinces.

When in its greateſt ſplendour, the kingdom of Angola contained the 17 following provinces: Cheſſama, Sumbi, Benguela, Rimba, Sietta, High and Low Bembea, Temba, Oacco, Cabezzo, Lubolo, Loanda, Bengo, Danda, Moſiche, Higher and Lower Ilamba, Oraij, and Embacca. The provinces conquered by the Portugueſe during the wars above mentioned were, Danda, Moſiche, Bengo, the Higher and Lower Ilamba, Oraij, Embacca, Benguela, Sietta, Cabezzo, Lubolo, and Oacco.

66 Rivers.

The principal rivers are thoſe already mentioned, viz. the Danda and Coanza. The Coanza is large, deep, and rapid. It empties itſelf into the Atlantic ocean about latitude 9° 20′ ſouth, twelve leagues ſouth of Loando the capital of the kingdom. It is navigable for 150 miles, and abounds with variety of fiſh. It forms ſeveral iſlands, has ſome cataracts, and one in particular which bears its name. As for its ſource, and the length of ground it croſſes from eaſt to weſt before it comes to the Portugueſe ſettlement, it is abſolutely unknown, as well as the countries through which it runs. Its mouth, which runs between the capes Palmerino and Lego, is above a league wide; the northern ſhore is the deepeſt, and along which the veſſels ſail. The fall of this river into the ocean is ſo rapid, that the ſea appears quite muddy for two or three leagues below it. Its mouth is not eaſily perceived from the open ſea, by reaſon of an iſland quite covered with high trees which lies juſt before it. The two principal iſlands formed by this river are called *Maſſander* and *Motchiamia*. The one is ſix leagues long, and about two miles broad: it is very fertile in maize, millet, and ſome other grains, which are reaped at three different ſeaſons of the year. It produces likewiſe vaſt quantities of manhioc, a root, of which they make a coarſe kind of meal, which ſerves inſtead of bread. Here alſo grow great numbers of palm and other fruit trees of various kinds. The iſland of Motchiamia is four or five miles long, and one in breadth, moſtly plain, and producing variety of roots and herbs. It likewiſe abounds in cattle; and there were formerly five or ſix Portugueſe families ſettled upon it, who drove a conſiderable trade in thoſe commodities, and likewiſe in ſlaves.

Concerning the river Danda we know little or nothing: only, that though its mouth is not above 70 or 80 miles diſtant from that of the Coanza, yet their diſtance grows ſo conſiderably wider as you penetrate further into the inlands, as to be much above twice if not thrice that ſpace; though how much, is not exactly known.

The manners, religion, and dreſs, &c. of the inhabitants, are much the ſame with the Congoeſe. See Congo.

Angola *Pea*, or *Pigeon pea*. See Cytisus, Botany *Index*.

ANGON, in the ancient military art, a kind of javelin uſed by the French. They darted it at a conſiderable diſtance. The iron head of this weapon reſembled a fleur-de-luce. It is the opinion of ſome writers, that the arms of France are not fleurs-de-luce, but the iron point of the angon or javelin of the ancient French. Angon Argery.

ANGOR, among ancient phyſicians, a concentration of the natural heat: the conſequence of which is a pain of the head, palpitation, and ſadneſs.

ANGOT, a province or kingdom of Abyſſinia, formerly rich and fertile, but almoſt ruined by the Gallas, a wandering nation in the internal parts of Africa, who diſpoſſeſſed the Abyſſinian monarchs of all that was worth poſſeſſing.

ANGOULESME, a city of France, the capital of the former duchy of Angoumois, now the department of Charente, and the ſee of a biſhop. It is ſeated on the top of a hill, ſurrounded with rocks, at the foot of which runs the river Charente. The inhabitants are ſaid to be about 8000, and have a conſiderable trade in paper, which they manufacture. E. Long. 0. 14. N. Lat. 45. 39.

ANGOUMOIS, formerly a province of France, now a diſtrict, bounded on the north by Poitou, on the eaſt by Limoſin and Marche, on the ſouth by Perigord, and on the weſt by Saintonge. Through this province run the rivers Touvre and Charente. This laſt is full of excellent fiſh; and though it often overflows its banks, it is ſo far from doing any damage, that it greatly enriches the ſoil. The Touvre is full of trouts. The air is generally warmer than at Paris, though the country is hilly. The ſoil produces plenty of wheat, rye, oats, Spaniſh corn, ſaffron, grapes, and all ſorts of fruits. Here are ſeveral iron mines, which yield a very good ſort of iron.

ANGOURA, Angora, or Angori, a city of Aſia, in Anatolia, formerly called *Ancyra*, and ſtill full of remarkable antiquities, which are ſo many marks of its ancient magnificence. It is at preſent one of the beſt cities in Anatolia; its ſtreets are full of pillars and old marbles, among which are ſome of porphyry and jaſper. The greateſt part of the pillars are ſmooth and cylindrical; ſome are channelled ſpirally; but the moſt ſingular are oval, with plate bands before and behind from the top to the bottom of the pedeſtal. The houſes are now made of clay, which is ſometimes intermixed with fine pieces of marble. The walls of the city are low, with very mean battlements. The maſonry of the walls is intermixed with pillars, architraves, capitals, and other ancient fragments, eſpecially that of the towers and gates. The caſtle of Angora has a triple encloſure; and the walls are of large pieces of white marble, and a ſtone much like porphyry.

The baſha of Angora has about 30 purſes income; and there are here about 300 janizaries, under the command of a ſardar. The Turks are ſaid to be 40,000 the Armenians 4000 or 5000, and the Greeks 600. The Armenians have ſeven churches, beſides a monaſtery, and the Greeks two. They breed the fineſt goats in the world; and their hair, which is of a dazzling white, is almoſt as fine as ſilk, and nine inches in length: it is worked into very fine ſtuffs, particularly camblet. All the inhabitants are employed in this manufacture. Several large caravans paſs through this city to different places. E. Long. 32. 5. N. Lat. 39. 30 See Ancyra.

ANGOY, a kingdom of Loango in Africa, bound-

ed

Angoy. ed on the north by Cacongo, and on the ſouth by Congo; from the former of which it is ſeparated by the river Cabinda, and from the latter by the river Zaire. It is but of ſmall extent; being only a vaſſal province of Cacongo, till the mani or prince, who had married a Portugueſe's daughter, was perſuaded by his father-in-law to make himſelf independent. This he effected at a favourable juncture, the king of Loango having but juſt before revolted from the king of Congo, and the king of Cacongo from the new king of Loango. The country is full of woods and thickets; and has no towns of any note, except one called Bomangoy, ſituated on the north bank of the Zaire, and not far from its mouth. Its chief port is Cabinda, called alſo Kabenda, or Cubenda, ſituated on the mouth of a river of the ſame name, about five leagues north of Cape Palmerino, on the north ſide of the Zaire's mouth. The bay is very commodious for trade, or wooding and watering along the ſhore. It is flat and marſhy in ſome places; but aſcends gradually about three miles inland, and then forms itſelf into a ridge of hills. On the aſcent of theſe is ſituated a town belonging to the father-in-law of the king above mentioned, where he conſtantly kept a ſtock of wood ready cut, to ſell to foreign ſhips at an eaſy rate. From theſe wood piles, ſouth-weſt along the bay, lie ſcattered a number of fiſhermen's huts, on each ſide a ſmall freſh-water river which falls into the bay; and thence all the water for ſhips is brought in caſks to the mouth of the river, which is ſo ſhallow, that even at full flood it can only be entered by a yawl carrying a caſk or two. The town ſtands on the round point of the bay looking to the weſtward; and the Engliſh have a factory on the ſouth-weſt of the road.

The country round the bay is moſtly barren; owing chiefly to the lazineſs of the inhabitants, which often occaſions a ſcarcity of proviſions. The wild beaſts ſwarm ſo in the woods, that they deſtroy all the tame kinds; ſo there are no cattle bred here but hogs. From the woods in this country ſome monkeys have been brought away, which in ſhape and ſtature reſembled the human ſpecies. Civet cats abound here in great plenty, and parrots may be bought for three or four ordinary knives. The coaſts abound ſo with oyſters, that the ſailors quickly load their boats with them; they being found lying in great heaps like ſmall rocks. The natives follow the occupation of fiſhing more than any other. They fiſh both in the ſea and in the rivers, making uſe of drag nets, which have long canes fixed at equal diſtances, inſtead of corks, to ſhow when any fiſh is caught. Theſe nets are made of a peculiar kind of root, which, after being beaten, may be ſpun like hemp.

The dreſs of the inhabitants is the ſame with that of the Congoeſe. They allow polygamy, and the beſt beloved wife hath the command of the reſt; but is no leſs liable to be turned out, if ſhe proves unfaithful. The ladies of the blood-royal have the privilege of chooſing their huſbands out of any, even the meaneſt rank; and have even the power of life and death over them; as likewiſe over their paramours, if any of them are caught tripping: but the huſbands are by no means entitled to expect the ſame fidelity from their royal ladies. Women of the lower rank are obliged, when they receive a ſtranger, to admit him for a night or two into their embraces. This obliged the miſſionaries, who travelled through this country, to give notice of their approach to any of their houſes, leſt none of the female ſex might enter within their doors.—Their religion conſiſts chiefly in a variety of ſuperſtitious cuſtoms; ſuch as powdering their public and domeſtic idols with the duſt of a kind of red wood, on the firſt day of the moon, and paying a kind of worſhip to that planet. If, on that night, it happens to ſhine clear and bright, they cry out, "Thus may I renew my life as thou doſt;" but if the air is cloudy, they imagine the moon hath loſt her virtues, and pay her no reſpect. We do not hear of their offering any ſacrifices to their idols; though they commonly conſult them about the ſucceſs of their enterpriſes, theſts, or ſuch like. The king of Congo ſtill ſtyles himſelf ſovereign of Angoy; but the king of this little ſtate pays neither tribute nor homage to any foreign power. Angra

ANGRA, a city of Tercera, one of the Azores; the capital, not only of that iſland, but of all the reſt, and the reſidence of the governor. It is ſeated on the ſouth ſide, near the middle of the longeſt diameter of the iſland, on the edge of the ſea. The harbour is the only tolerable one in the whole iſland, being equally ſecured againſt ſtorms and the efforts of an enemy. It is of the form of a creſcent; the extremities of which are defended by two high rocks, that run ſo far into the ſea as to render the entrance narrow, and eaſily covered by the batteries on each ſide. From this harbour the town is ſaid to derive its name, the word *Angra* ſignifying a creek, bay, or ſtation for ſhipping; and this is the only convenient one among all the Azores. The opening of the port is from the eaſt to the ſouth-weſt; and, according to Frezier, it is not above four cables length in breadth, and not two of good bottom. Here ſhips may ride in great ſafety during the ſummer; but as ſoon as the winter begins, the ſtorms are ſo furious, that the only ſafety for ſhipping is the putting to ſea with all poſſible expedition. Happily, however, theſe ſtorms are preceded by infallible ſigns, with which experience has made the inhabitants perfectly well acquainted. On theſe occaſions the Pico, a high mountain in another of the Azores, is overcaſt with thick clouds, and grows exceedingly dark; but what they look upon as the moſt certain ſign is the fluttering and chirping of flocks of birds round the city for ſome days before the ſtorm begins.

The town is well built and populous, is the ſee of a biſhop, under the juriſdiction of the archbiſhop of Liſbon. It hath five pariſhes, a cathedral, four monaſteries, as many nunneries, beſides an inquiſition and biſhop's court, which extends its juriſdiction over all the Azores, Flores, and Corvo. It is ſurrounded by a good wall, a dry ditch of great depth and breadth, and defended by a ſtrong caſtle rendered famous by the impriſonment of King Alphonſo by his brother Peter in 1668. Though moſt of the public and private buildings have a good appearance externally, they are but indifferently furniſhed within; but for this poverty the Portugueſe excuſe themſelves, by ſaying, that too much furniture would prove inconvenient in ſo warm a climate.

At Angra are kept the royal magazines for anchors, cables, ſails, and other ſtores for the royal navy, or occaſionally for merchantmen in great diſtreſs. All ma-

Angrivarii || Anguinum.

ritime affairs are under the inſpection of an officer called *Deſembergrador*, who hath ſubordinate officers and pilots for conducting ſhips into the harbour, or to proper watering places. The Engliſh, French, and Dutch, have each a conſul reſiding here, though the commerce of any of theſe nations with the Azores is very inconſiderable.

ANGRIVARII, (Tacitus); a people of Germany ſituated between the Weſer and the Ems, and eaſtward reaching beyond the Weſer, as far as the Cheruſci, on which ſide they raiſed a rampart (Tacitus); to the ſouth, having the Tubantes on the Ems, and on the Weſer where it bends to the foreſt Bacemis; to the weſt, the Ems and the confines of the Bructeri; and to the north, the territory of the Angrivarii lay between the Chamavi and Anſibarii. Ptolemy places them between the Cauchi and Suevi or Catti. Suppoſed now to contain a part of the county of Schaumburg, the half of the biſhopric or principality of Minden to the ſouth, the greateſt part of the biſhopric of Oſnaburg, the north part of the country of Teclenburg, and a part of the county of Ravenſberg. A trace of the name of the people ſtill remains in the appellation *Energn*, a ſmall town in the county of Ravenſberg.

ANGUILLA, one of the Weſt India or Carribbee iſlands, lying in about 18° 15′ N. Lat. It has its name from its ſnake-like form; and is about ten leagues in length and three in breadth. It was firſt diſcovered by the Engliſh in 1650, when it was filled with alligators and other noxious animals; but they, finding the ſoil fruitful, and proper for raiſing tobacco and corn, ſettled a colony on it, and imported live cattle, which have ſince multiplied exceedingly. But the colony not being ſettled under any public encouragement, each planter laboured for himſelf, and the iſland became a prey to every rapacious invader, which diſheartened the inhabitants ſo much, that all induſtry was loſt among them. Their chief ſufferings were from a party of wild Iriſh, who landed here after the Revolution, and treated them worſe than any of the French pirates who had attacked them before. The people of Barbadoes, and other Engliſh Caribbees, knowing the value of the ſoil, ſeveral of them removed to Anguilla, where they remained for many years, and even carried on a profitable trade, though without any government either civil or eccleſiaſtical. In 1745, their militia, though not exceeding 100 men, defended a breaſtwork againſt 1000 French who came to attack them; and at laſt obliged them to retire with the loſs of 150 men, beſides carrying off ſome of their arms and colours as trophies of their victory. Since that time the inhabitants have ſubſiſted moſtly by farming; though they ſtill plant ſugar, and the iſland is ſaid to be capable of great improvements.

ANGUILLIFORM, an appellation given by zoologiſts, not only to the different ſpecies of eels, but to other animals reſembling them in ſhape.

ANGUINA. See TRICOSANTHES.

ANGUINUM OVUM, a fabulous kind of egg, ſaid to be produced by the ſaliva of a cluſter of ſerpents, and poſſeſſed of certain magical virtues. The ſuperſtition in reſpect to theſe was very prevalent among the ancient Britons, and there ſtill remains a ſtrong tradition of it in Wales. The account Pliny * gives of it is as follows: "Præterea eſt ovorum genus in magna "Galliarum fama, omiſſum Græcis. Angues innume- "ri æſtate convoluti, ſalivis faucium corporumque ſpu- "mis artifici complexu glomerantur; anguinum appel- "latur. Druidæ ſibilis id dicunt in ſublime jactari, "ſagoque oportere intercipi, ne tellurem attingat; "profugere raptorem equo: ſerpentes enim inſequi, "donec arceantur amnis alicujus interventu."—Of which the following may ſerve as a tranſlation: (from *Maſon's Caractacus*; the perſon ſpeaking, a Druid.)

* Lib. xxix. c. 3.

Anguinum || Anhalt.

But tell me yet
From the grot of charms and ſpells,
Where our matron ſiſter dwells,
Brennus, has thy holy hand
Safely brought the Druid wand,
And the potent *Adder-ſtone*,
Gender'd 'fore th' autumnal moon?
When, in undulating twine,
The foaming ſnakes prolific join;
When they hiſs, and when they bear
Their wond'rous egg aloof in air:
Thence before to earth it fall,
The *Druid* in his hallow'd pall
Receives the prize,
And inſtant flies,
Follow'd by th' envenom'd brood,
'Till he croſs the cryſtal flood.

This wondrous egg ſeems to be nothing more than a bead of glaſs, uſed by the Druids as a charm to impoſe on the vulgar, whom they taught to believe, that the poſſeſſor would be fortunate in all his attempts, and that it would gain him the favour of the great.

Our modern Druideſſes (ſays Mr Pennant, from whom we extract) give much the ſame account of the *ovum anguinum*, *glain naidr*, as the Welſh call it, or the *adder gem*, as the Roman philoſopher does; but ſeem not to have ſo exalted an opinion of its powers, uſing it only to aſſiſt children in cutting their teeth, or to cure the chincough, or to drive away an ague.

Theſe beads are of a very rich blue colour; ſome plain, others ſtreaked. For their figure, ſee Plate XXXVI. fig. 22. N° 1, 2, 3.

ANGUIS, or SNAKE, in *Zoology*, a genus belonging to the order of amphibia ſerpentes. See OPHIOLOGY *Index*.

ANGURIA, the WATER MELON. See BOTANY *Index*.

ANGUS, a diſtrict of the county of Forfar in Scotland. It was an earldom belonging to the Douglaſſes, now extinct.

ANGUSTICLAVIA, in Roman antiquity, a tunica embroidered with little purple ſtuds. It was worn by the Roman knights, as the laticlavia was by the ſenators.

ANHALT, a principality of Germany, in the circle of Upper Saxony, is a long narrow tract, ſituated for the moſt part betwixt the rivers Elbe and Saal, about 90 miles in length from eaſt to weſt, but of unequal breadth, the greateſt being on the eaſt ſide, which is but 35 miles. The houſe of Anhalt, from whence the electors of Saxony and Brandenburg are ſaid to derive their original, is a very ancient and honourable family. The beſt genealogiſts deduce their origin from Berenthobaldus, who made war upon the Thuringians in the ſixth century: it has produced many princes who make a great figure in the German hiſtory.

Anhelatio ‖ Anjengo.

ſtory. Joachim Erneſt, who died in 1586, left five ſons, who divided the principality among them. All of them having children, and being of equal authority, they unanimouſly agreed to ſubmit to the eldeſt of the family, who has the ſupreme government, which is *Anhalt Deſſau*. The others are, *Anhalt Bernburg*, *Anhalt Schaumburg*, *Anhalt Coethen*, and *Anhalt Zerbſt*. The Saxons acknowledge that the inhabitants of theſe little independent ſovereignties live in the land of milk and honey. Theſe petty princes poſſeſs lands ſufficient for their expences, the revenues being reckoned about half a million of dollars. The tax on lands is four per cent. which, rating them at 20 years purchaſe, is not quite one ſhilling in the pound. Upon an emergency the ſubjects are able to raiſe half a million extraordinary. The towns in theſe little ſtates are not ſo numerous in proportion to the extent of country as in Saxony, but better peopled. It is bounded on the ſouth by the county of Mansfeld, on the weſt by the duchy of Halberſtadt, on the eaſt by the duchy of Saxony, and on the north by the duchy of Magdeburg. It abounds in corn, and is watered by the Sadle and Mulda; its principal trade is in beer.

ANHELATIO, or ANHELITUS, among phyſicians, a ſhortneſs of breath.

ANHINGA. See ORNITHOLOGY *Index*.

ANHOLT, an iſland of Denmark, in North Jutland, lying in the Categat, eight miles from the coaſt of Jutland, ten from Zealand, and ſeven from Halland. It is dangerous for ſeamen, for which reaſon there is a lighthouſe.

ANIAN, the name of a ſtrait formerly ſuppoſed to lie between the north-eaſt of Aſia and the north-weſt of America: but now found to exiſt only in imagination.

ANIAN is alſo the name of a barren ſandy deſert lying on the eaſt coaſt of Africa. It is ſo exceſſively hot and otherwiſe inhoſpitable, that it contains but very few inhabitants, except ſome wandering Arabs who live in camps.

ANIELLO, or MASSANIELLO. See Hiſtory of NAPLES.

ANJENGO, a ſmall town and factory, with a fort, on the coaſt of Malabar, in the peninſula on this ſide the Ganges, belonging to the Eaſt India Company. The fort is ſmall, but neat and ſtrong; it is a ſquare with four baſtions, having eight guns mounted on each, carrying a ball of 18 pounds. Two of theſe baſtions face the ſea, the other two the country. Beſides theſe, there is a line of 18 or 20 guns pointing towards the ſea, of 18 and 24 pounders. About a piſtol ſhot from the back of the fort runs a river, which, beſides being a ſecurity to the factory, adds much to the agreeable ſituation of the place. This river has its ſource in ſome diſtant mountains; and, deſcending in a courſe from the north and eaſt, it afterwards turns in ſeveral pleaſing meanders ſo far to the weſt as to waſh the bottom of our factory's garden, and at laſt winding to the ſouth, it empties itſelf into the ſea. Several beautiful ſmall iſlands too, which are waſhed by its current, diverſify the ſcenery, and greatly heighten the beauty of the proſpect. This ſettlement ſupplies our Eaſt India Company with pepper; and its ſituation is alſo very convenient for giving proper intelligence to our ſhips touching here from Europe, or from any part of India. E. Long. 76. 1. N. Lat. 7. 0.

ANIL, in *Botany*, a ſynonyme of a ſpecies of indigofera. See INDIGOFERA, BOTANY *Index*.

Anil ‖ Anima.

ANIMA, among divines and naturaliſts, denotes the ſoul, or principle of life, in animals. See SOUL.

ANIMA, among chemiſts, denotes the volatile or ſpirituous parts of bodies.

Anima Hepatis, is a name by which ſome call *ſal martis*, or *ſalt of iron*, on account of its ſuppoſed efficacy in diſeaſes of the liver.

Anima Mundi, a certain pure ethereal ſubſtance or ſpirit, diffuſed, according to many of the ancient philoſophers, through the maſs of the world, informing, actuating, and uniting the divers parts thereof into one great, perfect, organical, and vital body or animal. Plato treats at large of the ψυχὴ τὸ κοσμου, in his *Timæus*; and is even ſuppoſed to be the author of the *dogma*; yet are interpreters much at a loſs about his meaning. Ariſtotle, however, taking it in the common and obvious ſenſe, ſtrenuouſly oppoſes it. The modern Platoniſts explain their maſter's *anima mundi* by a certain univerſal ethereal ſpirit, which in the heavens exiſts perfectly pure, as retaining its proper nature; but on earth pervading elementary bodies, and intimately mixing with all the minute atoms thereof, it aſſumes ſomewhat of their nature, and becomes of a peculiar kind.—So the poet:

Spiritus intus alit, totoſque infuſa per artus
Mens agitat molem, et magno ſe corpore miſcet.

They add, that this *anima mundi*, which more immediately reſides in the celeſtial regions as its proper ſeat, moves and governs the heavens in ſuch a manner, as that the heavens themſelves firſt received their exiſtence from the fecundity of the ſame ſpirit: for that this *anima*, in being the primary ſource of life, everywhere breathed a ſpirit like itſelf, by virtue whereof various kinds of things were framed conformable to the divine ideas.

Anima Saturni, a white powder obtained by pouring diſtilled vinegar on litharge; of conſiderable uſe in enamelling. See ENAMEL.

ANIMADVERSION, in matters of literature, is uſed to ſignify, ſometimes correction, ſometimes remarks upon a book, &c. and ſometimes a ſerious conſideration upon any point.

ANIMAL, in *Natural Hiſtory*, an organized and living body, which is alſo endowed with ſenſation: thus, minerals are ſaid to grow or increaſe, plants to grow and live, but animals alone to have ſenſation.

It is this property of ſenſation alone that can be deemed the eſſential characteriſtic of an animal; and by which the animal and vegetable kingdoms ſeem to be ſo eſſentially ſeparated, that we cannot even imagine the leaſt approximation of the one to the other. Thoſe naturaliſts, indeed, who have ſuppoſed the diſtinction between animals and vegetables to conſiſt in any thing elſe than what we have already mentioned, have found themſelves greatly embarraſſed; and have generally agreed, that it was extremely difficult, if not impoſſible, to ſettle the boundaries between the animal and vegetable kingdoms. But this difficulty will be eaſily ſeen to ariſe from their taking the characteriſtic marks of the animal kingdom, from ſomething that was evidently common to both. Thus Boerhaave at-

Animal. tempted to diſtinguiſh an animal from a vegetable, by the former having a mouth, which the latter has not: but here, as the mouth of an animal is only the inſtrument by which nouriſhment is conveyed to its body, it is evident that this can be no eſſential diſtinction, becauſe vegetables alſo require nouriſhment, and have inſtruments proper for conveying it into their bodies; and where the end is the ſame, a difference in the means can never be eſſential. The fixing the difference in an animal's having a gula, ſtomach, and inteſtines, as is done by Dr Tyſon, is as little to the purpoſe.

The power of moving from one place to another, hath by many been thought to conſtitute their difference; and indeed, in moſt caſes, it is the obvious mark by which we diſtinguiſh an animal from a vegetable: but Lord Kames hath given ſeveral very curious inſtances of the locomotive power of plants; ſome of which, as he ſays, would do honour to an animal.—"Upon the ſlighteſt touch, the ſenſitive plant ſhrinks back and folds up its leaves, ſimilar to a ſnail; which on the ſlighteſt touch retires within its ſhell. A new ſpecies of the ſenſitive plant hath been lately diſcovered. See DIONÆA. If a fly perch upon one of its flower leaves, it cloſes inſtantly, and cruſhes the inſect to death. There is not an article in botany more admirable than a contrivance, viſible in many plants, to take advantage of good weather, and to protect themſelves againſt bad. They open and cloſe their flowers and leaves in different circumſtances; ſome cloſe before ſunſet, ſome after: ſome open to receive rain, ſome cloſe to avoid it. The petals of many flowers expand in the ſun; but contract at night, or on the approach of rain. After the ſeeds are fecundated, the petals no longer contract. All the trefoils may ſerve as a barometer to the huſbandman; they always contract their leaves on an impending ſtorm. Some plants follow the ſun, others turn from it. Many plants, on the ſun's receſs, vary the poſition of their leaves, which is ſtyled the *ſleep of plants*. A ſingular plant * was lately diſcovered in Bengal. Its leaves are in continual motion all day long; but when night approaches, they fall down from an erect poſture to reſt.

* A ſpecies of the *Hedyſarum*.

"A plant has a power of directing its roots for procuring food. The red whortleberry, a low evergreen plant, grows naturally on the tops of our higheſt hills, among ſtones and gravel. This ſhrub was planted in an edging to a rich border, under a fruit wall. In two or three years, it overran the adjoining deep-laid gravel walk: and ſeemed to fly from the border, in which not a ſingle runner appeared. An effort to come at food in a bad ſituation, is extremely remarkable in the following inſtance: Among the ruins of Newabbey, formerly a monaſtery in Galloway, there grows on the top of a wall a plane tree about 20 feet high. Straitened for nouriſhment in that barren ſituation, it ſeveral years ago directed roots down the ſide of the wall, till they reached the ground ten feet below; and now the nouriſhment it afforded to thoſe roots during the time of their deſcending is amply repaid, having every year ſince that time made vigorous ſhoots. From the top of the wall to the ſurface of the earth, theſe roots have not thrown out a ſingle fibre; but are now united in a ſingle root.

"Plants, when forced from their natural poſition, are endowed with a power to reſtore themſelves. A hop plant, twiſting round a ſtick, directs its courſe from ſouth to weſt, as the ſun does. Untwiſt it, and tie it in the oppoſite direction; it dies. Leave it looſe in the wrong direction: it recovers its natural direction in a ſingle night. Twiſt a branch of a tree ſo as to invert its leaves, and fix it in that poſition: if left in any degree looſe, it untwiſts itſelf gradually, till the leaves be reſtored to their natural poſition. What better can an animal do for its welfare? A root of a tree meeting with a ditch in its progreſs, is laid open to the air. What follows? It alters its courſe like a rational being, dips into the ground, ſurrounds the ditch, riſes on the oppoſite ſide to its wonted diſtance from the ſurface, and then proceeds in its original direction. Lay a wet ſponge near a root laid open to the air; the root will direct its courſe to the ſponge. Change the place of the ſponge: the root varies its direction. Thruſt a pole into the ground at a moderate diſtance from a ſcandent plant: the plant directs its courſe to the pole, lays hold of it, and riſes on it to its natural height. A honeyſuckle proceeds in its courſe, till it be too long for ſupporting its weight; and then ſtrengthens itſelf by ſhooting into a ſpiral. If it meet with another plant of the ſame kind, they coaleſce for mutual ſupport; the one ſcrewing to the right, the other to the left. If a honeyſuckle twig meets with a dead branch, it ſcrews from the right to the left. The claſpers of briony ſhoot into a ſpiral, and lay hold of whatever comes in their way for ſupport. If, after completing a ſpiral of three rounds, they meet with nothing, they try again by altering their courſe."—

Animal.

By comparing theſe and other inſtances of ſeeming voluntary motion in plants, with that ſhare of life wherewith ſome of the inferior kinds of animals are endowed, we can ſcarce heſitate at aſcribing the ſuperiority to the former; that is, putting ſenſation out of the queſtion. Muſſels, for inſtance, are fixed to one place as much as plants are; nor have they any power of motion, beſides that of opening and ſhutting their ſhells: and in this reſpect they have no ſuperiority over the motion of the ſenſitive plant; nor doth their action diſcover more ſagacity, or even ſo much, as the roots of the plane tree mentioned by Lord Kames.

Mr Buffon, who ſeems to be deſirous of confounding the animal and vegetable kingdoms, denies ſenſation to be any eſſential diſtinction. "Senſation (ſays he) more eſſentially diſtinguiſhes animals from vegetables: but ſenſation is a complex idea, and requires ſome explication. For if ſenſation implied no more than motion conſequent upon a ſtroke or an impulſe, the ſenſitive plant enjoys this power. But if, by ſenſation, we mean the faculty of perceiving and comparing ideas, it is uncertain whether brute animals are endowed with it. If it ſhould be allowed to dogs, elephants, &c. whoſe actions ſeem to proceed from motives ſimilar to thoſe by which men are actuated, it muſt be denied to many ſpecies of animals, particularly to thoſe which appear not to poſſeſs the faculty of progreſſive motion. If the ſenſation of an oyſter, for example, differed only in degree from that of a dog; why do we not aſcribe the ſame ſenſation to vegetables, though in a degree ſtill inferior? This diſtinction, therefore, between the animal and vegetable, is neither ſufficiently general nor determined.

"From

Animal. "From this inveſtigation we are led to conclude, that there is no abſolute and eſſential diſtinction between the animal and vegetable kingdoms; but that nature proceeds, by imperceptible degrees, from the moſt perfect to the moſt imperfect animal, and from that to the vegetables; and the freſh water polypus may be regarded as the laſt of animals and the firſt of plants."

It were to be wiſhed, that philoſophers would on ſome occaſions conſider, that a ſubject may be dark as well on account of their inability to ſee, as when it really affords no light. Our author boldly concludes, that there is no eſſential difference between a plant and an animal, becauſe we aſcribe ſenſation to an oyſter, and none to the ſenſitive plant; but we ought to remember, that though we cannot perceive a diſtinction, it may nevertheleſs exiſt. Before Mr Buffon, therefore, had concluded in this manner, he ought to have proved that ſome vegetables were endowed with ſenſation.

It is no doubt, however, as much incumbent on thoſe who take the contrary ſide of the queſtion, to prove that vegetables are not endowed with ſenſation, as it was incumbent on Mr Buffon to have proved that they are. But a little attention will ſhow us, that the difficulty here proceeds entirely from our inability to ſee the principle of ſenſation. We perceive this principle in ourſelves, but no man can perceive it in another. Why then does every individual of mankind conclude that his neighbour has the ſame ſenſations with himſelf? It can only be from analogy. Every man perceives his neighbour formed in a manner ſimilar to himſelf; he acts in a ſimilar manner on ſimilar occaſions, &c. Juſt ſo it is with brute animals. It is no more doubtful that they have ſenſations, than that we have them ourſelves. If a man is wounded with a knife, for inſtance, he expreſſes a ſenſe of pain, and endeavours to avoid a repetition of the injury. Wound a dog in the ſame manner, he will alſo expreſs a ſenſe of pain; and, if you offer to ſtrike him again, will endeavour to eſcape, before he feels the ſtroke. To conclude here, that the action of the dog proceeded from a principle different from that of the man, would be abſurd and unphiloſophical to the laſt degree.

We muſt further take notice, that there are ſenſations eſſentially diſtinct from one another; and in proportion as an animal is endowed with more or fewer of theſe different ſenſes, it is more or leſs perfect as an animal: but, as long as one of them remains, it makes not the leaſt approach to the vegetable kingdom; and, when they are all taken away, is ſo far from becoming a vegetable, that it is only a maſs of dead matter. The ſenſes of a perfect animal, for inſtance, are five in number. Take away one of them, ſuppoſe ſight; he becomes then a leſs perfect animal, but is as unlike a vegetable as before. Suppoſe him next deprived of hearing: his reſemblance to a vegetable would be as little as before; becauſe a vegetable can neither feel, taſte, nor ſmell, and we ſuppoſe him ſtill to enjoy theſe three ſenſes. Let us, laſtly, ſuppoſe him endowed only with the ſenſe of feeling, which, however, ſeems to include that of taſte, and he is no more a vegetable than formerly, but only an imperfect animal. If this ſenſe is then taken away, we connect him not with the vegetable kingdom, but with what Mr Buffon calls *brute matter*. It is to this kingdom, and not to the vegetable, that animals plainly approximate as they deſcend. Indeed, to ſuppoſe an approximation between the vegetable and animal kingdoms, is very abſurd: for, at that rate, the moſt imperfect animal ought to be the moſt perfect plant; but we obſerve no ſuch thing. All animals, from the higheſt to the loweſt, are poſſeſſed of vegetable life; and that, as far as we can perceive, in an equal degree, whether the animal life is perfect or imperfect: nor doth there ſeem to be the ſmalleſt connexion between the higheſt degree of vegetation and the loweſt degree of ſenſation. Though all animals, therefore, are poſſeſſed of vegetable life, theſe two ſeem to be as perfectly diſtinct and incommenſurate to one another as any two things we can poſſibly imagine.

The power of vegetation, for inſtance, is as perfect in an onion or leek, as in a dog, an elephant, or a man; and yet, though you threaten a leek or an onion ever ſo much, it pays no regard to your words, as a dog would do; nor, though you wound it, does it avoid a ſecond ſtroke. It is this principle of ſelf-preſervation in all animals, which, being the moſt powerful one in their nature, is generally taken, and with very good reaſon, as the true characteriſtic of animal life. This principle is undoubtedly a conſequence of ſenſation; and as it is never obſerved to take place in vegetables, we have a right to ſay that the foundation of it, namely ſenſation, belongs not to them. There is no animal, which makes any motion in conſequence of external impulſe where danger is threatened, but what puts itſelf in a poſture of defence; but no vegetable whatever does ſo. A muſcle, when it is touched, immediately ſhuts its ſhell; and as this action puts it in a ſtate of defence, we conclude that it proceeded from the principle of ſelf-preſervation. When the ſenſitive plant contracts from a touch, it is no more in a ſtate of defence than before; for whatever would have deſtroyed it in its expanded ſtate, will alſo do it in its contracted ſtate. We conclude, therefore, that the motion of the ſenſitive plant proceeds only from a certain property called by phyſicians *irritability*; and which, though our bodies poſſeſs it in an eminent degree, is a characteriſtic neither of animal nor vegetable life, but belongs to us in common with brute matter. It is certain, that an electrified ſilk thread ſhows a much greater variety of motions than any ſenſitive plant. If a bit of ſilk thread is dropt on an electrified metal plate, it immediately erects itſelf; ſpreads out the ſmall fibres like arms; and, if not detained, will fly off. If a finger is brought near it, the thread ſeems greedily to catch at it. If a candle approaches, it claſps cloſe to the plate, as if afraid of it.—Why do we not conclude that the thread in this caſe is really afraid of the candle? For this plain reaſon, That its ſeeming flight is not to get away from the candle, but to get towards the electrified metal; and, if obliged to remain there, will ſuffer itſelf to be burnt without offering to ſtir.—The ſenſitive plant, in like manner, after it has contracted, will ſuffer itſelf to be cut in pieces, without making the leaſt effort to eſcape. The caſe is not ſo with the meaneſt animal. A hedgehog, when alarmed, draws its body together, and expands its prickles, thereby putting itſelf in a poſture of defence. Throw it into water; and the ſame principle of ſelf-preſervation

Animal. preſervation prompts it to expand its body and ſwim. A ſnail, when touched, withdraws itſelf into its ſhell; but if a little quicklime is ſprinkled upon it, ſo that its ſhell is no longer a place of ſafety, it is thrown into agonies, and endeavours to avail itſelf of its locomotive power in order to eſcape the danger. In muſſels and oyſters, indeed, we cannot obſerve this principle of ſelf-preſervation ſo ſtrongly, as nature has deprived them of the power of progreſſive motion: but, as we obſerve them conſtantly to uſe the means which nature has given them for ſelf-preſervation, we can have no reaſon to think that they are deſtitute of that principle upon which it is founded.

But there is no need of arguments drawn from the inferior creation. We ourſelves are poſſeſſed both of the animal and vegetable life, and certainly muſt know whether there is any connexion between vegetation and ſenſation, or not.—We are conſcious that we exiſt; that we hear, ſee, &c.: but of our vegetation we are abſolutely unconſcious. We feel a pleaſure, for inſtance, in gratifying the calls of hunger and thirſt; but of the proceſs by which our aliment is formed into chyle, the chyle mixed with the blood, the circulation of that fluid, and the ſeparation of all the humours from it, we are altogether ignorant. If we then, who are more perfect than other vegetables, are utterly inſenſible of our own vegetable life, why ſhould we imagine that the leſs perfect vegetables are ſenſible of it?

To illuſtrate our reaſoning here by an example.—The direction of the roots of the plane tree mentioned by Lord Kames, ſhows as much ſagacity, if we are to look only to the outward action, as can be obſerved in any motion of the moſt perfect animal whatever; nevertheleſs, we have not the leaſt ſuſpicion, either that the tree ſaw the ground at a diſtance, or that it was informed of its being there by the reſt of its roots. If a wound is made in the body of a man, and a loſs of ſubſtance is to be repaired, the ſame ſagacity will be obſerved in the arrangement of the fibres, not only as if they were animated, but they will diſpoſe of themſelves ſeemingly with a degree of wiſdom far ſuperior to what we have any idea of; yet this is done without our having the leaſt knowledge either how it is done, or of its being done at all. We have therefore in ourſelves a demonſtration, that vegetable life acts without knowing what it does: and if vegetables are ignorant of their moſt ſagacious actions, why ſhould we ſuſpect that they have a ſenſation, let it be ever ſo obſcure, of any of their inferior ones, ſuch as contracting from a touch, turning towards the ſun, or advancing to meet a pole?

Thus we may eaſily give Mr Buffon a reaſon why we aſcribe ſenſation to an oyſter, and none to a vegetable; namely, becauſe we perceive the vegetable do nothing but what is alſo performed in our own bodies, without our having the leaſt ſenſation of it; whereas an oyſter puts itſelf in a defenſive poſture on the approach of danger; and this being an action ſimilar to our own upon a like occaſion, we conclude that it proceeds from the ſame principle of ſenſation. Here it may alſo be obſerved, that though the inferior animals are deficient in the number, they are by no means ſo in the acuteneſs of their ſenſations; on the contrary, though a muſſel or an oyſter is probably endowed with no other ſenſe than that of feeling, yet this ſenſe Animal. is ſo exquiſite, that it will contract upon the ſlighteſt touch, ſuch as we would be altogether inſenſible of.

As to that power of contractility, or irritability, which is obſerved in ſome plants; our ſolids have it, when deprived both of vegetable and animal life: for a muſcle, cut out of a living body, will continue to contract, if it is irritated by pricking it, after it has neither ſenſation nor vegetation.

A very good moral reaſon may alſo be adduced why we do not believe vegetables to be endowed with ſenſation.—Had they been ſo, we muſt ſuppoſe them to ſuffer pain when they are cut or deſtroyed; and, if ſo, what an unhappy ſtate muſt they be in, who have not the leaſt power to avoid the injuries daily offered them? In fact, the goodneſs of the Deity is very conſpicuous in not giving to vegetables the ſame ſenſations as to animals; and, as he hath given them no means of defence, though we had not been told it by himſelf, we might have known that he gave them for food to animals; and, in this caſe, to have endowed them with ſenſation would have been a piece of cruelty. Though animals without number prey upon one another, yet all of them have ſome means of defence; from whence we may juſtly conclude, that their mutual deſtruction was not an original appointment of the Creator, but what he foreſaw would happen in a courſe of time, and which he therefore gave every one of them ſome means of guarding againſt. It may no doubt be here objected, that the giving ſome means of ſelf-defence to every animal cannot be reckoned a ſufficient proof that it was not the original deſign of the Creator that they ſhould be deſtroyed, ſeeing theſe means are not always effectual for their preſervation.—This objection, however, cannot be completely obviated without a ſolution of the queſtion concerning the origin of evil among the works of a perfectly good Being. But whatever difficulty there may be in ſolving this queſtion, it is certain, that, as ſome means of ſelf-defence is given to every animal, it has been the original deſign of the Creator, that in all caſes one ſpecies of animals ſhould not be deſtroyed at the pleaſure of any other ſpecies; and as no means of ſelf-defence is given to any vegetable, it is plain that they have been deſtined for a prey to every ſpecies of animals that had acceſs to them. Philoſophers have inſiſted much on the neceſſity of one animal's devouring another, that there might be room ſufficient for all; but this, ſo far from being a ſyſtem worthy of the divine wiſdom, ſeems to us to be a reflection upon it, as if the Author of nature could not have found means to preſerve the life of one part of his creatures, without the deſtruction and miſery of the reſt. The ſacred writings leave us at no loſs to ſee how this carnivorous diſpoſition came in; and, in the next world, this piece of perfection (as the ſanguinary philoſophers above mentioned would have it to be) ſeems to be left out; for there, it is ſaid, "They ſhall not hurt nor deſtroy; the lion ſhall eat ſtraw like the ox, and there ſhall be no more pain."

When ſpeaking of the food of plants, we took occaſion to mention a certain power, totally different from that of attraction or repulſion, by which the food of a plant, after it was attracted, or otherwiſe brought to it, was aſſimilated to its ſubſtance. This power which we there diſtinguiſh by the name of *tranſmutation*, belongs

Animal, Animal-Flower.

longs in a more eminent degree to animals. The alimentary ſubſtance is changed into two kinds of matter, (1.) An excrementitious one, which paſſes off through the inteſtines; and (2.) A fluid, which is the direct pabulum of the animal. Different ſubſtances, however, are not equally changeable by this proceſs. The human ſtomach is not capable of acting upon any animal ſubſtance till it has loſt its vital principle: the ſtomachs of ſome animals cannot act upon creatures of their own ſpecies: ſome have an apparatus for grinding their food after it is ſwallowed, &c. and there are no animals but what are ſubject to death by taking certain ſubſtances into their ſtomach. Some ſubſtances alſo, though they reſiſt the action of the ſtomach, and paſs unchanged into the ſyſtem, produce no bad effects. Thus, madder will turn the bones of animals red; rhubarb will communicate its purgative nature to the milk, and its deep yellow colour to the urine.—All theſe changes, however, ſeem to belong to the vegetative part of our ſyſtem: for as every one of them are performed without our knowledge of the manner how; and not only ſo, but while we are abſolutely unconſcious of their being done; we can have no reaſon to ſuppoſe, that the *animal* life, properly ſo called, is at all connected with them, any farther than as they are at preſent the means of preſerving the creature alive, and making the connexion betwixt the principle of life and this viſible creation.

The deſcription and claſſing of animals make a conſiderable part of Natural Hiſtory, known by the name of *Zoology*.

Animal, uſed adjectively, denotes any thing belonging to, or partaking of, the nature of animals. Thus, animal actions, thoſe that are peculiar to animals; ſuch are ſenſation and muſcular motion.

Animal-Flower, in *Zoology*, a name given to ſeveral ſpecies of animals belonging to the genus Actinia of Linnæus. They have likewiſe been diſtinguiſhed by the names of *Urtica Marina*, or *Sea-nettle*, from their ſuppoſed property of ſtinging; and *Sea-anemone*, from their claws or tentacles being diſpoſed in regular circles, and tinged with a variety of bright lively colours, reſembling the petals of ſome of our moſt beautiful flowers. As to one ſpecies particularly, mentioned by Abbé Dicquemarre, (Phil. Tranſ. for 1773, art. 37.) the pureſt white, carmine, and ultramarine, are ſaid to be ſcarce ſufficient to expreſs their brilliancy. The bodies of ſome of them are hemiſpherical, of others cylindrical, and of others ſhaped like a fig. Their ſubſtance likewiſe differs: ſome are ſtiff and gelatinous, others fleſhy and muſcular; but all of them are capable of altering their figure when they extend their bodies and claws in ſearch of food. They are found on many of the rocky coaſts of the Weſt India iſlands, and likewiſe on ſome parts of the coaſt of England.

They have only one opening, which is in the centre of the uppermoſt part of the animal; round this are placed rows of fleſhy claws; this opening is the mouth of the animal, and is capable of great extenſion. The animals themſelves, though exceedingly voracious, will bear long faſting. They may be preſerved alive a whole year, or perhaps longer, in a veſſel of ſea-water, without any viſible food; but, when food is preſented, one of them will ſucceſſively devour two muſſels in their ſhells, or even ſwallow a whole crab as large as a hen's egg. In a day or two the crab ſhell is voided at the mouth, perfectly cleared of all the meat. The muſſel ſhells are likewiſe diſcharged whole, with the two ſhells joined together, but entirely empty, ſo that not the leaſt particle of fiſh is to be perceived on opening them. An anemone of one ſpecies will even ſwallow an individual of another ſpecies; but after retaining it ten or twelve hours, will throw it up alive and unhurt. Through this opening alſo it produces its young ones alive, already furniſhed with little claws, which, as ſoon as they fix themſelves, they begin to extend in ſearch of food. Animal-Flower.

One of the extremities of the ſea-anemone reſembles, as we have ſaid, the outward leaves of that flower: while its limbs are not unlike the ſhag or inner part of it. By the other extremity it fixes itſelf, as by a ſucker, to the rocks or ſtones lying in the land: but it is not totally deprived of the power of progreſſive motion, as it can ſhift its ſituation, though very ſlowly.

A particular ſpecies of animal-flowers has been found in ſome of the iſlands ceded to Britain at the laſt treaty of peace with France; and the following account of them was publiſhed in the Philoſophical Tranſactions, vol. 57. by Mr Ellis, in a letter to Lord Hillſborough.

"This compound animal, which is of a tender fleſhy ſubſtance, conſiſts of many tubular bodies ſwelling gently towards the upper part, and ending like a bulb or very ſmall onion: on the top of each is its mouth, ſurrounded by one or two rows of tentacles, or claws, which when contracted look like circles of beads.

"The lower part of all theſe bodies has a communication with a firm fleſhy wrinkled tube, which ſticks faſt to the rocks, and ſends forth other fleſhy tubes, which creep along them in various directions. Theſe are full of different ſizes of theſe remarkable animals, which riſe up irregularly in groups near to one another.

"This adhering tube, that ſecures them faſt to the rock, or ſhelly bottom, is worthy of our notice. The knobs that we obſerve, are formed in ſeveral parts of it by its inſinuating itſelf into the inequalities of the coral rock, or by graſping pieces of ſhells, part of which ſtill remain in it, with the fleſhy ſubſtance grown over them.

"This ſhows us the inſtinct of nature, that directs theſe animals to preſerve themſelves from the violence of the waves, not unlike the anchoring of muſſels, by their fine ſilken filaments that end in ſuckers; or rather like the ſhelly baſis of the ſerpula, or worm ſhell, the tree oyſter, and the ſlipper barnacle, &c. whoſe baſes conform to the ſhape of whatever ſubſtance they fix themſelves to, graſping it faſt with their teſtaceous claws, to withſtand the fury of a ſtorm.

"When we view the inſide of this animal diſſected lengthwiſe, we find like a little tube leading from the mouth to the ſtomach, from whence there riſe eight wrinkled ſmall guts, in a circular order, with a yellowiſh ſoft ſubſtance in them; theſe bend over in the form of arches towards the lower part of the bulb, from whence they may be traced downwards, to the narrow part of the upright tube, till they come to the fleſhy adhering tube, where ſome of them may be perceived entering into a papilla, or the beginning of an animal of the like kind, moſt probably to convey it

nouriſhment

Animal-Flower.

nourishment till it is provided with claws; the remaining part of these slender guts is continued on in the fleshy tube, without doubt, for the same purpose of producing and supporting more young ones from the same common parent.

"The many longitudinal fibres that we discover lying parallel to each other, on the inside of the semitransparent skin are all inserted in the several claws round the animal's mouth, and are plainly the tendons of the muscles for moving and directing the claws at the will of the animal; these may be likewise traced down to the adhering tube.

"As this specimen has been preserved in spirits, the colour of the animal, when living, cannot be certainly known; it is at present of a pale yellowish brown.

"With regard to its name, it may be called *Actinia sociata*, or the *Cluster Animal-flower*."

The Abbé Dicquemarre, by many curious though cruel experiments, related in the Phil. Trans. for 1773, has shown that these animals possess, in a most extraordinary degree, the power of reproduction; so that scarce any thing more is necessary to produce as many sea anemonies as we please, than to cut a single one into as many pieces. A sea anemone being cut in two by a section through the body, that part, where the limbs and mouth are placed, ate a piece of a mussel offered to it soon after the operation, and continued to feed and grow daily for three months after. The food sometimes passed through the animal; but was generally thrown up again, considerably changed, as in the perfect sea anemone. In about two months, two rows of limbs were perceived growing out of the part where the incision was made. On offering food to this new mouth, it was laid hold of and eaten; and the limbs continually increasing, the animal gradually became as perfect as those which had never been cut. In some instances, however, he found, that, when one of these creatures was cut through, new limbs would be produced from the cut place, those at the mouth remaining as before; so that a monstrous animal was the consequence, having two mouths, and feeding at both ends. Having put some of them into a pan of water, set over a slow fire, he found that they lost their life at 50 degrees of Reaumur's thermometer. To avoid the imputation of cruelty in these experiments, the author argues the favourable consequences that have attended his operations on the sea anemonies which have been so fortunate as to fall into his hands; as he hath not only multiplied their existence, but also renewed their youth; which last, he adds, "is surely no small advantage."

In Hughes's Natural History of Barbadoes, an account is also given of several species of animal flowers. They are there described as only found in a bason in one particular cave; and of the most remarkable species mentioned by him we have the following description.

"In the middle of the bason, there is a fixed stone, or rock, which is always under water. Round its sides, at different depths, seldom exceeding 18 inches, are seen, at all times of the year, issuing out of little holes, certain substances that have the appearance of fine radiated flowers, of a pale yellow, or a bright straw colour, slightly tinged with green, having a circular border of thicker petals, about the size of, and much resembling, those of a single garden marigold, except that the whole of this seeming flower is narrower at the discus, or setting-on of the leaves, than any flower of that kind.

Animal-Flower || Animal System.

"I have attempted to pluck one of these from the rock, to which they are always fixed; but never could effect it: for as soon as my fingers came within two or three inches of it, it would immediately contract, close together its yellow border, and shrink back into the hole of the rock; but if left undisturbed for about four minutes, it would come gradually in sight, expanding, though at first very cautiously, its seeming leaves, till at last it appeared in its former bloom. However, it would again recoil, with a surprising quickness when my hand came within a small distance of it. Having tried the same experiment by attempting to touch it with my cane, and a small slender rod, the effect was the same.

"Though I could not by any means contrive to take or pluck from the rock one of these animals entire; yet I once cut off (with a knife which I had held for a long time out of sight, near the mouth of a hole out of which one of these animals appeared) two of these seeming leaves. These, when out of the water, retained their shape and colour; but, being composed of a membrane-like substance, surprisingly thin, it soon shrivelled up, and decayed."

The reproductive power of the Barbadoes animal-flower is prodigious. Many people coming to see these strange creatures, and occasioning some inconvenience to a person through whose grounds they were obliged to pass, he resolved to destroy the objects of their curiosity; and, that he might do so effectually, caused all the holes out of which they appeared, to be carefully bored and drilled with an iron instrument, so that we cannot suppose but their bodies must have been entirely crushed to a pulp: nevertheless, they again appeared in a few weeks from the very same places.

Plate XXXIV. fig. 1. represents the actinia sociata, or clustered animal-flower, described by Mr Ellis, with its radical tube adhering to a rock: (a) One of the animals stretching out its claws. Fig. 2. A perpendicular dissection of one of the bodies, to show the gullet, intestines, stomach, and fibres or tendons that move the claws: (a) A young one arising out of the adhering tube. Fig. 3. The actinia after, or animal flower of the newly ceded islands. Fig. 4. The actinia anemone, or sea anemone from the same place. Fig. 5. The under part of the same by which it adheres to the rocks. Fig. 6. The actinia helianthus, or the sea sun-flower from ditto. Fig. 7. the under part of the same. Fig. 8. The actinia dianthus, or sea carnation, from the rocks at Hastings in Sussex. This animal adheres by its tail, or sucker, to the upper part of the projecting rocks opposite to the town; and, when the tide is out, has the appearance of a long white fig; this is the form of it when put into a glass of sea water. It is introduced here as a new variety of this animal not yet described.

Animal Food. See Food.

Animal Oeconomy. This subject is explained under Anatomy.

Animal Magnetism. See Magnetism.

Animal Spirit. See *Nervous Fluid.*

Animal System denotes the whole class of beings endowed with animal life, otherwise called *Animal Kingdom.*

Animals,

Fig. 1.

Fig. 2.

Fig. 6.

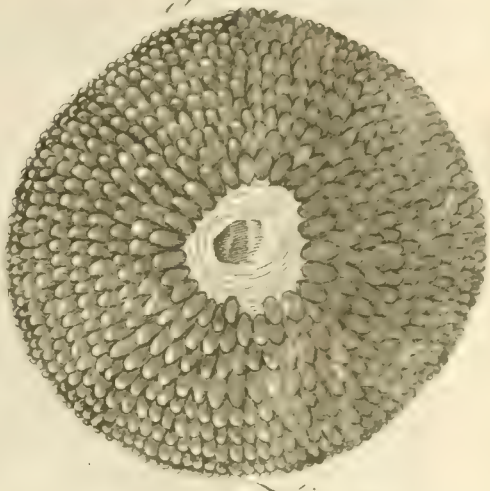


Fig. 4.

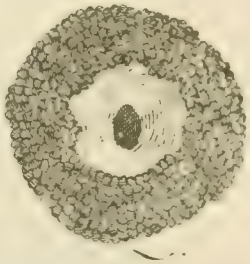


Fig. 3.

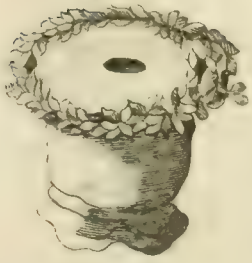
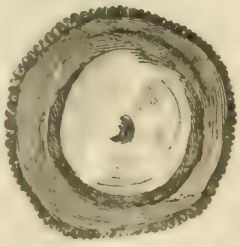


Fig. 7.

Fig. 8.

Fig. 5.



Animals || Animalcule.

Animals, the preparation of, for collections or muſeums. See Quadrupeds, Birds, Reptiles.

Pairing of Animals. See Pairing.

ANIMALCULE, in general, ſignifies a little animal; and thus the term might be applied to every animal which is conſiderably inferior in ſize to ourſelves. It hath been cuſtomary, however, to diſtinguiſh by the name of *animalcules* only ſuch animals as are of a ſize ſo diminutive, that their true figure cannot be diſcerned without the aſſiſtance of glaſſes; and more eſpecially it is applied to ſuch as are altogether inviſible to the naked eye, and cannot even be perceived to exiſt but by the aſſiſtance of microſcopes.

1 Common acceptation of the word.

By the help of magnifying glaſſes, we are brought into a kind of new world; and numberleſs animals are diſcovered, which from their minuteneſs muſt otherwiſe for ever have eſcaped our obſervation; and how many kinds of theſe inviſibles there may be, is ſtill unknown; as they are diſcerned of all ſizes, from thoſe which are barely inviſible to the naked eye, to ſuch as reſiſt the action of the microſcope, as the fixed ſtars do that of the teleſcope, and with the beſt magnifiers hitherto invented appear only as ſo many moving points.

2 Different ſizes of animalcules.

The ſmalleſt living creatures our inſtruments can ſhow are thoſe that inhabit the waters: for though poſſibly animalcules equally minute, or perhaps more ſo, may fly in the air, or creep upon the earth, it is ſcarce poſſible to bring ſuch under our examination; but water being tranſparent, and confining the creatures in it, we are able, by applying a drop of it to our glaſſes, to diſcover, to a certain degree of ſmallneſs, all that it contains.—Some of the moſt curious of theſe animalcules, which have been deſcribed by microſcopical obſervers, we ſhall here give an account of.

3 Hair-like inſect.

1. *The Hair like Inſect.* This ſo called by Mr Baker on account of its ſhape; being extremely ſlender, and frequently an hundred and fifty times as long as broad. The body or middle part, which is nearly ſtraight, appears, in ſome, compoſed of ſuch rings as the windpipe of land animals is made up of; but in others ſeems rather ſcaled, or made up of rings that obliquely croſs one another. Its two ends are hooked or bent, pretty nearly in the ſame degree, but in a direction oppoſite to one another; and as no eyes can be diſcerned, it is difficult to judge which is the head or tail. Its progreſſive * motion is very ſingular, being performed by turning upon one end as a centre, and deſcribing almoſt a quarter of a circle with the other, as repreſented in the figure. Its motions are very ſlow, and require much patience and attention in the obſerver. Theſe creatures are ſo ſmall, that millions of millions of them might be contained in an inch ſquare. When viewed ſingly, they are exceedingly tranſparent, and of a beautiful green colour; but when numbers of them are brought together, they become opaque, loſe their green colour, and grow entirely black.

* Plate XXXV. fig. 1.

4 Its extreme ſmallneſs, &c.

5 Delights in ſociety.

Notwithſtanding the extreme minuteneſs of theſe animalcules, they ſeem to be fond of ſociety; for, after viewing for ſome time a parcel of them taken up at random, they will be ſeen diſpoſing themſelves in a kind of regular order†. If a multitude of them are put into a jar of water, they will form themſelves into a regular body, and aſcend ſlowly to the top, where after they have remained for ſome time expoſed to the air, their green colour changes to a beautiful ſky blue. When they are weary of this ſituation, they form themſelves into a kind of rope, which ſlowly deſcends as low as they intend; but if they happen to be cloſe to the ſide of the jar, they will deſcend upon it. They are ſo nearly of the ſpecific gravity of water itſelf, that they will either remain at the bottom, float on the ſurface, or be ſuſpended in the middle, according as they are originally placed, or as they themſelves have a mind.

† Fig. 2.

A ſmall quantity of the matter containing theſe animalcules‡ having been put into a jar of water, it ſo happened, that one part went down immediately to the bottom, whilſt the other continued floating on the top. When things had remained for ſome time in this condition, each of theſe ſwarms of animalcules began to grow weary of its ſituation, and had a mind to change its quarters. Both armies, therefore, ſet out at the ſame time, the one proceeding upwards, and the other downwards; ſo that, after ſome hours journey, they met in the middle. A deſire of knowing how they would behave on this occaſion, engaged the obſerver to watch them carefully; and to his ſurpriſe he ſaw the army that was marching upwards, open to the right and left, to make room for thoſe that were deſcending. Thus, without confuſion or intermixture, each held on its way: the army that was going up, marching in two columns to the top, and the other proceeding in one column to the bottom, as if each had been under the direction of wiſe leaders.

‡ Fig. 3.

6 Seems poſſeſſed of a conſiderable degree of ſagacity.

The hair-like inſect was firſt diſcovered in a ditch at Norwich, one end of which communicates with the river there, and the other end with a ſecond ditch, into which ſeveral kennels empty themſelves. The length of this ditch, when Mr Baker wrote his account of this animalcule, was at leaſt 100 yards, and its breadth nine. The bottom, for more than a foot thick, was covered with a blackiſh green ſubſtance, in appearance like mud, made up for the moſt part of theſe inſects; but, ſuppoſing only a half or a quarter part of it to be compoſed of them, according to the dimenſions we have given, their numbers muſt exceed all imagination.

7 Found in prodigious quantity.

2. *Eels in paſte*, &c. When paſte is allowed to ſtand till it become ſour, it is then found to be the habitation of numberleſs animalcules, which may be diſcerned by the naked eye; and though their form cannot be perfectly diſtinguiſhed, their motion is very perceptible, and the whole paſte will ſeem to be animated. Fig. 4. repreſents one of theſe anguillæ magnified. The moſt remarkable property of theſe inſects is, that they are viviparous. If one of them is cut through near the middle, ſeveral oval bodies of different ſizes will be ſeen to iſſue forth. Theſe are young anguillæ, each of them coiled up and encloſed in its proper membrane, which is ſo exquiſitely fine, as ſcarcely to be diſcernible by the greateſt magnifier, while it encloſes the embryo animal. The largeſt and moſt forward immediately break through this covering, unfold themſelves, and wriggle about in the water nimbly; others get out, uncoil, and move themſelves about more ſlowly; and the leaſt mature continue entirely without motion. The *uterus*, or veſſel that contains all theſe oval bodies, is compoſed of many ringlets, not unlike the aſpera arteria of land animals, and ſeems to be conſiderably elaſtic; for as ſoon as the animalcule is cut in two, the oval bodies are thruſt out with ſome degree of violence, from the ſpringing back or action of this bowel. An

8 Eels in paſte viviparous.

Animalcule.

hundred and upwards of the young ones have been ſeen to iſſue from the body of one ſingle eel, whereby the prodigious increaſe of them may be accounted for; as probably ſeveral ſuch numerous generations are produced in a ſhort time. They ſeem to be all prolific; and unleſs trial happens to be made upon one that has brought forth all its young, or when the paſte has been kept for a very long time, the experiment will always ſucceed.—This property of theſe eels being viviparous renders it highly improbable that they never become flies.

Animalcules of a ſimilar kind are likewiſe found in vinegar; and, like thoſe already deſcribed, are found to be viviparous. But it is not only in acid matters that ſuch appearances are obſerved. In ſome fields of wheat, many grains may be obſerved, that appear blackiſh outwardly, as if ſcorched; but when opened are found to contain a ſoft white ſubſtance, which, attentively conſidered, appears to be nothing elſe than a congeries of threads or fibres lying cloſe to each other in a parallel direction, much reſembling the unripe down of ſome thiſtles on cutting open the flower heads before they begin to blow. This fibrous matter diſcovers not the leaſt ſign of life or motion, unleſs water is applied; but immediately on wetting, provided the grains of wheat have been newly gathered, the ſuppoſed fibres ſeparate, and appear to be living creatures. Their motions at firſt are very languid; but gradually become more vigorous, twiſting and wriggling themſelves ſomewhat in the manner of the eels in paſte, but always ſlower than they, and with a great deal leſs regularity.

9 Similar creatures found in blighted wheat.

If the grains of wheat are grown dry by keeping, and in that condition are cut open, the fibrous matter is very diſtinguiſhable; and, on putting water to it, will ſeparate with great readineſs, and ſeem like fine tubes or threads tapering at both ends; but not the leaſt motion will be perceived till they have been in water for ſeveral hours, and ſometimes they will never move at all. But if the ſame grains are ſteeped in water for three or four hours, or buried for ſome days in the earth, till they are fully ſaturated with moiſture, and then opened with a penknife; on taking out a ſmall portion of the white matter carefully, and ſpreading it thin upon a ſlip of glaſs, the animalcules will be ſeen bundled together, and extended longitudinally, but without motion: and though, upon the application of water, they will not revive ſo ſoon as thoſe taken from freſh grains, whoſe moiſture has never been exhaled; yet, after remaining an hour or two in water, they are conſtantly found alive and vigorous, even though the grains have been kept in a dry condition for ſeveral years. It is neceſſary, however, to adapt, in ſome meaſure, the time of continuing the grains in water or earth to the age and dryneſs of them: for if they are not opened before they are too much ſoftened, the animalcules will be dead; and unleſs the huſks are opened to let thoſe creatures out after they have been ſteeped, they inevitably periſh in them: otherwiſe, they will continue alive in water for many months; and, ſhould the water dry away, may be revived again by giving them a freſh ſupply.

10 How diſcoverable.

11 Precautions neceſſary in making the experiment.

12 Proteus, why ſo called.

3. *The Proteus.* This animalcule has been dignified by Mr Baker with the name of *Proteus*, on account of its aſſuming a great number of different ſhapes, ſo as ſcarce to be known as the ſame animal in its various transformations; and indeed, unleſs it be carefully watched while paſſing from one ſhape to another, it will often become ſuddenly inviſible, as happened more than once to Mr Baker.

Animalcule.

13 Where found.

When water, wherein any ſort of vegetable has been infuſed, or animals preſerved, has ſtood quietly for ſome days, or weeks, in any glaſs or other veſſel, a ſlimy ſubſtance will be collected about the ſides: ſome of which being taken up with the point of a penknife, placed on a ſlip of glaſs in a drop of water, and looked at through the microſcope, will be found to harbour ſeveral kinds of little animals that are ſeldom found ſwimming about at large; among which the proteus is one. Its ſhape is better underſtood from the figure, than from any deſcription that could be given. Its ſubſtance and colour ſeem to reſemble that of a ſnail; and its whole ſhape ſeems to bear a conſiderable reſemblance to that of a ſwan. It ſwims to and fro with great vivacity; but will now and then ſtop for a minute or two; during which time its long neck is uſually employed as far as it can reach, forwards, and on every ſide, with a ſomewhat ſlow, but equable motion, like that of a ſnake, frequently extending thrice the length of its body, and ſeemingly in ſearch of food.

14 Its ſhape, colour, &c.

There are no eyes, nor any opening in the head like a mouth, to be diſcerned: but its actions plainly prove it to be an animal that can ſee; for though multitudes of different animalcules ſwim about in the ſame water, and its own progreſſive motion is very ſwift, it never ſtrikes againſt any of them, but directs its courſe between them with a dexterity wholly unaccountable, ſhould we ſuppoſe it deſtitute of ſight.

15 Its transformations.

When the proteus is alarmed, it ſuddenly draws in its long neck, repreſented in fig. 5. and 6. transforming itſelf into the ſhape repreſented in fig. 7. when it becomes more opaque, and moves about very ſlowly with the large end foremoſt. When it has continued ſome time in this poſture, it will often, inſtead of the head and neck it had formerly, put forth a new one, with a kind of wheel machinery repreſented fig. 8. the motions of which draw a current of water to it from a conſiderable diſtance. Having often pulled in and thruſt out their ſhort head, ſometimes with and ſometimes without the wheel-work, the creature, as if weary, will remain motionleſs for a while; then its head and long neck will be very ſlowly protruded, as in fig. 9. and it ſoon reſumes its former agility. Sometimes it diſpoſes of its neck and head, as repreſented in fig. 10.

16 Vorticella, where found.

4. *The Wheel Animal*, or *Vorticella*. This wonderful animalcule is found in rain water that has ſtood ſome days in leaden gutters, or in hollows of lead on the tops of houſes; or in the ſlime or ſediment left by ſuch water; and perhaps may alſo be found in other places; but if the water ſtanding in gutters of lead, or the ſediment left behind it, has any thing of a red colour in it, one may be almoſt certain of finding them therein. Though it diſcovers no ſigns of life except when in the water, yet it is capable of continuing alive for many months after it is taken out of the water, and kept in a ſtate as dry as duſt. In this ſtate it is of a globular ſhape, exceeds not the bigneſs of a grain of ſand, and no ſigns of life appear: but being put into water, in the ſpace of half an hour a languid motion begins, the globule turns itſelf about, lengthens itſelf by ſlow degrees,

Animalcule.

degrees, assumes the form of a lively maggot, and most commonly in a few minutes afterwards puts out its wheels; swimming vigorously through the water, as if in search of food; or else, fixing itself by the tail, works the wheels in such a manner as to bring its food to it.

Fig. 23. and 24. show the wheel animal in its globular form; fig. 11. and 12. in its maggot state; and fig. 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22. show the different appearances of its wheels, and also its various intermediate changes between the globular and maggot state.

17 Its wheel work described.

The most remarkable part of this animalcule is its wheel work. This consists of a couple of semicircular instruments, round the edges of which many little fibrillæ move themselves very briskly, sometimes with a kind of rotation, and sometimes in a trembling or vibrating manner. When in this state, it sometimes unfastens its tail, and swims along with a great deal of swiftness, seemingly in pursuit of its prey. Sometimes the wheels seem to be entire circles, armed with small teeth, like those of the balance wheel of a watch, appearing projected forwards beyond the head, and extending sidewise somewhat wider than its diameter. The teeth or cogs of these wheels seem to stand very regularly at equal distances: but the figure of them varies according to their position, the degree of their protrusion, and perhaps the will of the animal itself. They appear sometimes like minute oblong squares, rising at right angles from the periphery of a circle, like ancient battlements on a round tower; at other times they terminate in sharp points, and altogether resemble a kind of Gothic crown. They are often seen in a kind of curved direction, all bending the same way, and seeming like so many hooks; and now and then the ends of them will be perceived to be clubbed like mallets. This figure, however, as well as the first, they assume but rarely.

As these wheels are everywhere excessively transparent, except about their circular rim or edge, where the cogs are set, it is very difficult to determine by what contrivance they are turned about, or what their real figure is, though they seem exactly to resemble wheels moving round upon an axis. It is also hardly possible to be certain whether those circular bodies in which the teeth are set, are of a flat form, or hollow and conical; but they seem rather to be of a conical figure. The difficulty of conceiving how an articulation could be contrived so as to cause a real rotation, hath caused many people imagine that there was a deception in this case: But Mr Baker assures us, that when the wheels are fully protruded, they never fail to show all the visible marks of a regular rotation; and, in some positions, the same cogs or teeth may be traced by the eye during a complete revolution.

18 Shows all the marks of a real rotation.

19 Shows great quickness of sensation.

All the actions of this creature seem to imply sagacity and quickness of sensation. At the least touch or motion in the water, they instantly draw in their wheels; and Mr Baker conjectures, that their eyes are lodged somewhere about the wheels; because, while in the maggot state, its motions are slow and blundering; but after the wheels are protruded, they are performed with great regularity, swiftness, and steadiness.

Notwithstanding the minuteness of this animalcule, the microscope generally discovers others in the same drop of water, compared with which the wheel animal may be said to be a whale. The transparency of its body, therefore, allows its internal parts to be seen, which cannot be perceived in the minutest animalcules, on account of the smallness of their size. *a*, Is the appearance of the head; and though it is everywhere transparent, a ring or circle, more particularly remarkable for its clearness, is commonly perceived about the middle of the forehead, a little above the mouth. This, Mr Baker thinks, might justly be called the seat of the brain. Many vessels which seem to take their origin from thence are discernible in the head, wherein some transparent fluid appears continually agitated by a kind of fluctuating motion.

Fig. 15. 20 Description of its internal parts.

The thorax, *b*, is joined to the head by a very short neck, *c*, and appears to be about the fixth part of the whole length of the animal. In the middle of the thorax is placed the heart, *d*, where its systole and diastole are plainly visible. It is seen through the back of the insect, shutting and opening alternately with great regularity and exactness. Its size is proportionable to the creature's bigness; and its shape, during the systole, is nearly circular, being composed seemingly of two semilunar parts, which then approach each other laterally, and form between them a roundish or horse-shoe-like figure, whose upper side is flat, and the under one convex. The diastole is performed by a seeming separation, or opening, of these two semilunar parts, whereby the transverse diameter of the heart is very much enlarged. This separation begins exactly in the middle of the lower part next the tail; and opens to such a considerable width upwards, that the two parts, when at their utmost distention, seem only joined by an arched vessel at their anterior end. The alternate motions of contraction and dilatation are performed with great strength and vigour, in pretty much the same time as the pulsation of the arteries of a man in health. The motions of the heart are communicated to all the internal parts of the thorax, and seem to extend a great deal further; for a strict examination discovers, at the same time, throughout the whole animal, contractions and dilatations going on, that are apparently correspondent thereto. These motions of the heart, however, are sometimes suspended or imperceptible for two or three minutes: after which they are renewed, and go on again with the same regularity as before. From the under part of the thorax proceeds a small transparent horn represented at *a*, fig. 11. and 12. It is never visible but when the animal turns on its back or side.

The blood or circulating fluid of the wheel animal is so absolutely colourless, that the current of it through the vessel is undistinguishable by glasses. A sort of irregular agitation of some fluid is indeed perceived, which is perhaps a compound motion of currents running different ways, and forming such an appearance, though no single current is anywhere distinctly visible.

Immediately below the thorax is another annular division, *e*, joining upwards to the thorax and downwards to the abdomen, the entrance whereof it serves occasionally to enlarge or diminish. The abdomen *f*, is by much the largest part of the animal, and contains the stomach and intestines. When the insect is full of food, these bowels appear opaque and of a blood-red colour, extending quite through the belly and great

Animalcule.

part of the tail, and exhibiting a variety of contractions and dilatations. The belly is capable of ſtretching out greatly in length, or being ſhortened very much, and widening its diameter. It aſſumes many ſhapes, and becomes occaſionally a caſe for all the other parts of the body.

21 Other kinds of wheel animals.

Beſides the above mentioned one, there are found in the waters ſeveral other ſpecies of animals furniſhed with wheels, ſome of which appear to have a rotatory, and others a vibratory, motion. Fig. 25. repreſents a kind found in the ditch at Norwich, where the hair-like inſect is produced. They differ from the foregoing only in having very long tails. Fig. 26, 27, and 28. repreſent a ſpecies of wheel animals, which are alſo covered with ſhells. The body of this ſpecies conſiſts of three parts, in like manner as the other; only the thorax and abdomen, in this, are not ſeparated by any gut, or intermediate veſſel, but are joined immediately together. The heart is plainly perceived, having a regular ſyſtole and diaſtole, at *a*, as in the former ſpecies. Theſe creatures occaſionally draw themſelves entirely within their ſhells; and the ſhell then appears terminated by ſix ſhort ſpikes on one ſide and two on the other.

22 Manner of producing their young ones.

The young ones of this ſpecies are carried in oval ſacculi, or integuments, faſtened externally on the lower part of their ſhells ſomewhere about the tail; theſe ſacculi are ſometimes opaque only at one end, and ſeemingly empty at the other; ſometimes they appear opaque in the middle, with a tranſparency all round, as in fig. 26. When the young one is about to burſt its integuments, the parent aſſiſts it greatly, by wagging its tail, and ſtriking the oval bag, ſo that the young one's head becomes as it were forced into the water, though the tail cannot be ſo ſoon diſengaged. In this condition the young one ſets its wheel a-going, and exerts all its endeavours to free itſelf from its confinement. When it has got clear, it ſwims away, wagging its tail as the old one does, and leaving the integument adhering to the ſhell of the parent. The old one then uſes a number of efforts to get rid of this incumbrance, ſtriking againſt it with her tail, fixing the end of her tail upon it, and then darting her body forward; with ſeveral very odd motions not eaſy to be deſcribed. This kind of wheel animals are great tormentors of the water flea, *Pulex aquaticus arboreſcens* of Swammerdam; of which a figure is given from that author (Plate XXXVI.); fig. 2. ſhows the natural ſize of the flea; and fig. 1. ſhows it magnified, with ſome of the wheel animals adhering to it. Theſe inſects are often found in great numbers in the ſame water: and when that is the caſe, it is not uncommon to diſcover five or ſix of theſe cruſtaceous wheel animals faſtened by their tail to the ſhell or horns of the flea; cauſing it, ſeemingly, a vaſt deal of uneaſineſs: nor can they be driven away, or ſhaken off, by all the efforts the flea can uſe for that purpoſe.

Fig. 28. *b*.

23 Infeſt the Pulex Aquaticus.

24 Bell-flower animal.

5. *The Bell-flower Animal*, or *Plumed Polype*. Theſe animalcules dwell in colonies together, from ten to fifteen (ſeldom falling ſhort of the former number, or exceeding the latter), in a ſlimy kind of mucilaginous or gelatinous caſe; which, out of the water, has no determined form, appearing like a little lump of ſlime; but, when expanded therein, has ſome reſemblance to the figure of a bell with its mouth upwards; and is uſually about half an inch long, and a quarter of an inch in diameter. Theſe bells, or colonies, are to be found adhering to the large leaves of duckweed, and other aquatic plants. They may be moſt eaſily diſcovered by letting a quantity of water, with duckweed in it, ſtand quietly for three or four hours in glaſs veſſels in a window, or other place whence a ſtrong light comes: for then, if any are about the duckweed, they will be found, on careful inſpection, extending themſelves out of their caſes, and making an elegant appearance.

Animalcule.

25 Where diſcovered.

The bell, or caſe, which theſe animals inhabit, being very tranſparent, all the motions of its inhabitants may be diſcerned through it diſtinctly. It ſeems divided internally into ſeveral apartments, or rather to contain ſeveral ſmaller ſacculi, each of which encloſes one of theſe animals. The openings at the tops of theſe ſacculi, are but juſt ſufficient to admit the creature's head and a ſmall part of its body to be thruſt out beyond them, the reſt remaining always in the caſe. It can, however, occaſionally retire into its caſe altogether; and never fails to do ſo when alarmed by any ſudden motion of the water, or of the veſſel which contains it.

26 Motions of the whole colony.

Beſide the particular and ſeparate motion which each of theſe creatures is able to exert within its own caſe, and independent of the reſt; the whole colony together has a power of altering the poſition of the bell, or even of removing it from one place to another; and hence this bell is ſometimes found ſtanding perfectly upright, as in fig. 29. and 33. and ſometimes bending the upper part downwards, as in fig. 30. As theſe animalcules ſeem not to chooſe to ſtay together in ſocieties whoſe number exceeds 15, when the colony happens to increaſe in number, the bell may be obſerved to ſplit gradually, beginning from about the middle of the upper or anterior extremity, and proceeding downwards towards the bottom, as in fig. 32. till they at laſt ſeparate entirely, and become two complete colonies independent of each other, one of which ſometimes removes to another part of the veſſel.

27 Deſcription of an individual.

The arms of each individual of this colony are ſet round the head, to the number of 40, having each the figure of an Italic *ſ*, one of whoſe hooked ends is faſtened to the head; and all together, when expanded, compoſe a figure ſhaped ſomewhat like a horſe's ſhoe, convex on one ſide next the body, but gradually opening and turning outwards, ſo as to leave a conſiderable area within the outer extremities of the arms. When the arms are thus extended, the creature, by giving them a vibrating motion, can produce a current in the water, which brings the animalcules, or whatever other minute bodies are within the ſphere of its action, with great velocity to its mouth, ſituated between the arms; where they are taken in if liked, or driven away by a contrary motion. The food is conveyed immediately from the mouth or opening between the arms, through a narrow neck, into a paſſage ſeemingly correſpondent to the œſophagus in land animals; down which it paſſes into the ſtomach, where it remains for ſome time, and then is voided upwards, in ſmall round pellets, through a gut whoſe exit is near the neck. The body conſiſts of three diviſions; in the uppermoſt of which are contained all the above-mentioned inteſtines, which are only to be diſcerned when the creature is full, at which time they become opaque. The other two diviſions,

Animalcule.

visions, which are probably fixed to the bell, seem to be of no other use than to give the creature a power of contraction and extension. The arms are not able to contract like those of the common polype; but when the animal retires into its case, they are brought together in a close and curious order, so as to be easily drawn in. Though their general appearance, when expanded, is that of a cup whose base and top are of a horse-shoe form, they sometimes separate into four parts, and range themselves as in fig. 36. so as to resemble four separate plumes of feathers. Though their eyes cannot be discovered, yet Mr Baker thinks they have some perception of the light: for when kept in the dark, they always remain contracted; but on being exposed to the light of the sun or of a candle, they constantly extend their arms, and show evident signs of being pleased.

28 Seem to have a perception of light.

Fig. 29. represents one complete colony or bell standing erect, with all the animals out of their kingdom, and their arms extended, exhibiting all together a very pretty appearance: *a*, represents two oval bodies, supposed by Mr Baker to be eggs.

Fig. 30. shows all the creatures withdrawn into their cells, and the end of the bell hanging downwards.

Fig. 33. shows the bell erect, with only one of the animals coming out, in order to show its connexion with the bell.

Fig. 34. shows the head and arms of a single polype closing together, and disposing themselves in order to be drawn into the bell.

Fig. 35. shows one complete animal greatly magnified, to show its several parts more distinctly; viz. *a*, the head, resembling a horse shoe; *b b*, the arms seen from one side; *c*, the narrow neck; *d*, the œsophagus; *e*, the stomach; *f*, the gut or last intestine through which the food passes after being digested in the stomach; *g*, the anus, where the feces are discharged in little pellets; *h i*, that part of the bell which surrounds the body of the animal, and closes upon it when it retires down.

Fig. 37. The head and arms seen in front.

29 Globe animal.

6. *The Globe animal.* This animalcule, represented fig. 38. seems exactly globular, having no appearance of either head, tail, or fins. It moves in all directions, forwards or backwards, up or down, either rolling over and over like a bowl, spinning horizontally like a top, or gliding along smoothly without turning itself at all. Sometimes its motions are slow, at other times very swift; and, when it pleases, it can turn round, as it were upon an axis, very nimbly, without removing out of its place. The whole body is transparent, except where the circular black spots are shown in the figure. Some of the animals have no spots, and others from one to seven. The surface of the whole body appears, in some, as if all over dotted with points; in others, as if granulated like shagreen: but their more general appearance is, as if beset thinly round with short moveable hairs or bristles, which probably are the instruments by which their motions are performed. The animalcules may be seen by the naked eye, but appear only like moving points.

30 Pipe animal.

7. *The Pipe animal.* These creatures are found on the coast of Norfolk, living in small tubes or cases of sandy matter, in such multitudes as to compose a mass sometimes of three feet in length. Fig. 39. shows a piece of such a congeries broke off, where *aaaa* represent the mouths or openings of the pipes wherein the little animals make their abode. Fig. 40. shows one single pipe, with its inhabitant, separated from the rest, and magnified nine or ten times in diameter. The pipe or case *b* is made of sand, intermixed here and there with minute shells, and all cemented together by a glutinous slime, probably issuing from the animal's own body *c*, which is composed of muscular fibres like the fibre of a worm, capable of great extension or contraction. The anterior end or head, *d*, is exceedingly beautiful, having round it a double row of little arms disposed in a very regular order, and probably capable of extension, in order to catch its food, and bring it to its mouth. Some of these tubes are found petrified, and constitute one species of syringoides.

Animalcule.

31 Sometimes found petrified.

8. *An Insect with net-like arms.* The properties and shape of this little animal are very extraordinary. It is found only in cascades, where the water runs very swift. There these insects are found in clusters, standing erect on their tails; and resembling, when all together, the combs of bees at the time they are filled with their aureliæ. On being taken out of the water, they spin threads, by which they hang exactly in the same manner as the garden spider. Fig. 42. shows one of these insects magnified. Its body appears curiously turned as on a lathe; and at the tail are three sharp spines, on which it raises itself, and stands upright in the water; but the most curious apparatus is about its head, where it is furnished with two instruments like fans or nets, which serve to provide its food. These it frequently spreads out and draws in again; and when drawn up, they are folded together with the utmost nicety and exactness, so as to be indiscernible when brought close to the body. At the bottom of these fans a couple of claws are fastened to the lower part of the head, which, every time the nets are drawn in, conduct to the mouth of the animal whatever is taken in them. When the creature does not employ its nets, it thrusts out a pair of sharp horns, as in fig. 41. where the insect is shown magnified about 400 times.

32 Insect with a net-like arm.

Some of these creatures being kept with water in a vial, most of them died in two days; and the rest, having spun themselves transparent cases (which were fastened either to the sides of the glass, or to pieces of grass put into it), seemed to be changed into a kind of chrysalis: but, before taking this form, they appeared as in fig. 43. which shape they likewise assumed when weary with catching their food, or when lying in wait for it. None of them lived above three days; and though fresh water was given them two or three times a-day, yet, in a few hours, it would stink to a degree scarce conceivable, and that too at several yards distance, though, in proportion to the water, all the included insects were not more than as 1 to 150,000. This makes it probable, that it is necessary for them to live in a rapid stream, lest they should be poisoned by the effluvia issuing from their own bodies, as no doubt they were in the vial.

33 Surprising property of living in water.

9. *A curious aquatic worm.* This animalcule is shown, magnified, at fig. 31. It is found in ditch water; and is of various sizes, from $\frac{1}{25}$ to $\frac{1}{4}$ of an inch in length. About the head it is somewhat of a yellowish colour; but all the rest of the body is perfectly colourless and transparent, except the intestines, which are considerably

34 An aquatic worm.

Animalcule.

considerably opaque, and disposed as in the figure. Along its sides are several papillæ, with long hairs growing from them: it has two black eyes, and is very nimble. But the most remarkable thing in this creature is a long horn or proboscis; which, in the large ones, may be seen with the naked eye, if the water is clear, and is sometimes $\frac{1}{10}$ of an inch in length: this it waves to and fro as it moves in the water, or creeps up the side of the glass; but it is not known whether it is hollow, or of what use it is to the creature itself.

35 Its horn or proboscis.

36 Spermatic animals, when discovered.

10. *Spermatic Animals*, and *Animacula Infusoria*. The discovery of living animalcules in the semen of most animals is claimed by Mr Leeuwenhoek and Mr Nicholas Hartsoeker, who both say they published it about the end of the year 1677 or beginning of 1678: but Mr Leeuwenhoek having given the most particular description of, and made by far the greatest number of experiments concerning them, the discovery is commonly attributed to him.

37 General appearance the same in every animal.

According to this naturalist, these animalcules are found in the semen masculinum of every kind of animal: but their general appearance is very much the same, nor doth their size differ in proportion to the bulk of the animal to which they belong. The bodies of all of them seem to be of an oblong oval form, with long tapering slender tails issuing from them; and as by this shape they resemble *tadpoles*, they have been frequently called by that name; though the tails of them, in proportion to their bodies, are much longer than the tails of tadpoles are: and it is observable, that the animalcules in the semen of fishes have tails much longer and more slender than the tails of those in other animals; insomuch, that the extremity of them is not to be discerned without the best glasses, and the utmost attention. Fig. 21. N° 1, 2, 3, 4, represent the spermatic animalcula of the rabbit; and N° 5, 6, 7, 8, those of a dog; according to Mr Leeuwenhoek.

Pl. XXXII.

38 Inconceivable number and minuteness.

The numbers of these animalcula are inconceivable. On viewing with a microscope the milt or semen masculinum of a living cod fish, innumerable multitudes of animalcules were found therein of such a diminutive size, that he supposed at least 10,000 of them capable of being contained in the bulk of a grain of sand; whence he concludes, that the milt of this single fish contained more living animalcules than there are to be found people living in the whole world. To find the comparative size of these animalcules, Mr Leeuwenhoek placed a hair of his head near them; which hair, through his microscope, appeared an inch in breadth; and he was satisfied, that at least 60 such animalcules could easily lie within that diameter; whence, their bodies being spherical, it follows, that 216.000 of them are but equal to a globe whose diameter is the breadth of a hair. He observed, that when the water wherewith he had diluted the semen of a cod fish was exhaled, the little bodies of the animalcules burst in pieces; which did not happen to those in the semen of a ram: and this he imputes to the greater firmness and consistency of the latter, as the flesh of a land animal is more compact than fish.

39 Are animated by a vital principle.

These animalcules appear to be very vigorous, and tenacious of life; for they may be observed to move long after the animal from which they are taken is dead. They have this peculiarity also that they are continually in motion, without the least rest or intermission, provided there is fluid sufficient for them to swim about in. These animalcula are peculiar to the semen; nothing that has the least token of life being discovered, by the best glasses, either in the blood, spittle, urine, gall, or chyle. Great numbers, however, are to be found in the whitish matter that sticks between the teeth; some of which are of an oval figure, and others resemble eels.

Animalcule.

40 Animalcula infusoria.

The *Animalcula Infusoria* take their name from their being found in all kinds either of vegetable or animal infusions. Indeed, there is scarce any kind of water, unless impregnated with some mineral substance, but what will discover living creatures.—Mr Leeuwenhoek says, that at first he could discern no living creatures in rain water; but after standing some days, he discovered innumerable animalcules, many thousands of times less than a grain of sand, and in proportion to a mite as a bee is to a horse.—In other rain water, which had likewise stood some time, he found the smallest sort he had ever seen; and, in a few days more, met with others eight times as big as these, and almost round. In another quantity of rain water that had been exposed like the former, he discovered a kind of animalcules with two little horns in continual motion. The space between the horns was flat, though the body was roundish, but tapering a little towards the end; where a tail appeared, four times as long as the body, and the thickness of a spider's web. He observed several hundreds of these within the space a grain of sand would occupy. If they happened on the least filament or string, they were entangled in it; and then would extend their bodies into an oblong round, and struggle hard to disengage their tails. He observed a second sort of an oval figure, and imagined the head to stand at the sharpest end. The body was flat, with several small feet moving exceeding quick, but not discernible without a great deal of attention. Sometimes they changed their shape into a perfect round, especially when the water began to dry away. He met also with a third sort, twice as long as broad, and eight times smaller than the first: yet in these he discerned little feet, whereby they moved very nimbly. He perceived likewise a fourth sort, a thousand times smaller than a louse's eye, and which exceeded all the rest in briskness: he found these turning themselves round, as it were upon a point, with the celerity of a top. And he says, there were several other sorts.

41 Mr Leeuwenhoek's account of animalcules in rain water.

42 Surprising production of these animalcules.

The production of *animalcula infusoria* is very surprising. In four hours time, an infusion of cantharides has produced animalcula less than even the tails of the spermatic animals we have already described. Neither do they seem to be subject to the fate of other animals; but, several kinds of them at least, by dividing themselves in two, to enjoy a sort of immortality. Nor do the common methods by which other animals are destroyed, seem to be effectual for destroying their vital principle. Hot mutton gravy, secured in a phial with a cork, and afterwards set among hot ashes to destroy as effectually as possible every living creature that could be supposed to exist in it, has nevertheless been found swarming with animalcules after standing a few days. In the Philosophical Transactions, Vol. LIX, we have the following curious account, given us by Mr Ellis, of animalcules produced from an infusion of potatoes and of hempseed.

43 Mr Ellis's account of animalcules from infusion of potatoes.

"On

Animalcule.

"On the 25th of May 1768, Fahrenheit's thermometer 70°, I boiled a potato in the New River water till it was reduced to a mealy conſiſtence. I put part of it, with an equal proportion of the boiling liquor, into a cylindrical glaſs veſſel that held ſomething leſs than half a wine pint, and covered it cloſe immediately with a glaſs cover. At the ſame time, I ſliced an unboiled potato; and, as near as I could judge, put the ſame quantity into a glaſs veſſel of the ſame kind; with the ſame proportion of New River water not boiled; and covered it with glaſs cover; and placed both veſſels cloſe to each other.

"On the 26th of May, 24 hours afterwards, I examined a ſmall drop of each, by the firſt magnifier of Wilſon's microſcope, whoſe focal diſtance is reckoned at $\frac{1}{25}$ part of an inch; and, to my amazement, they were both full of animalcula of a linear ſhape, very diſtinguiſhable, moving to and fro with great celerity; ſo that there appeared to be more particles of animal than vegetable life in each drop.

"This experiment I have repeatedly tried, and always found it to ſucceed in proportion to the heat of the circumambient air; ſo that even in winter, if the liquors are kept properly warm, at leaſt in two or three days, the experiment will ſucceed.

"What I have obſerved are infinitely ſmaller than ſpermatic animals, and of a very different ſhape; the truth of which every accurate obſerver will ſoon be convinced of, whoſe curioſity may lead him to compare them; and I am perſuaded he will find they are no way akin.

"At preſent I ſhall paſs over many other curious obſervations, which I have made on two years experiments, in order to proceed to the explaining a hint which I received laſt January from M. de Sauſſure of Geneva, when he was here; which is, that he found one kind of theſe animalcula infuſoria that increaſe by dividing acroſs into nearly two equal parts.

"I had often ſeen this appearance in various ſpecies, a year or two ago, as I found upon looking over the minutes I had taken when I made any new obſervation; but always ſuppoſed the animal, when in this ſtate, to be in coition.

"Not hearing, till after M. de Sauſſure left this kingdom, from what infuſion he had made his obſervation; his friend Dr de la Roche of Geneva informed me, the latter end of February laſt, that it was from hempſeed.

44 From an infuſion of hempſeed.

"I immediately procured hempſeed from different ſeedſmen in different parts of the town. Some of it I put into New River water, ſome into diſtilled water, and ſome I put into very hard pump water. The reſult was, that in proportion to the heat of the weather, or the warmth in which they were kept, there was an appearance of millions of minute animalcula in all the infuſions; and, ſome time after, ſome oval ones made their appearance, as at fig. 3. *b*, *c*. Theſe were much larger than the firſt, which ſtill continued: theſe wriggled to and fro in an undulatory motion, turning themſelves round very quick all the time that they moved forwards. I was very attentive to ſee theſe animals divide themſelves; and at laſt I perceived a few of the appearance of fig. 3. *a*, as it is repreſented by the firſt magnifier of Wilſon's microſcope; but I am ſo well convinced by experience that they would ſeparate, that I did not wait to ſee the operation: however, as the following ſketches, which I have drawn from five other ſpecies, will very fully explain this extraordinary phenomenon, there will be no difficulty in conceiving the manner of the firſt. See fig. 4, 5, 6, 7, 8.

45 Divide themſelves into two.

"The proportion of the number of theſe animals which I have obſerved to divide in this manner, to the reſt, is ſcarce 1 to 50; ſo that it appears rather to ariſe from hurts received by ſome few animalcula among the many, than to be the natural manner in which theſe kinds of animals multiply; eſpecially if we conſider the infinite quantity of young ones which are viſible to us through the tranſparent ſkins of their bodies, and even the young ones that are viſible in thoſe young ones while in the body of the old ones.

"But nothing more plainly ſhows them to be zoophytes than this circumſtance, That when, by accident, the extremity of their bodies has been ſhrivelled for want of a ſupply of freſh water, the applying more freſh water has given motion to the part of the animal that was ſtill alive; by which means, this ſhapeleſs figure has continued to live and ſwim to and fro all the time it was ſupplied with freſh water.

"I cannot finiſh this part of my remarks on theſe animals, without obſerving, that the excellent Linnæus has joined the *beroë* with the *volvox*, one of the animalcula infuſoria. The beroë is a marine animal, found on our coaſt; of a gelatinous tranſparent nature, and of an oval or ſpherical form, from half an inch to an inch diameter; divided like a melon into longitudinal ribs, each of which is furniſhed with rows of minute fins; by means of which, this animal, like the animalcula infuſoria, can ſwim in all directions with great ſwiftneſs. In the ſame manner I have ſeen moſt of thoſe minute animals move ſo ſwift that we could not account for it, without ſuppoſing ſuch a proviſion in nature, which is really true, but cannot be ſeen till the animals grow faint for want of water; then, if we attend, we may with good glaſſes plainly diſcover them. 46 Beroë deſcribed.

"I have lately found out, by mere accident, a method to make their fins appear very diſtinctly, eſpecially in the larger kind of animalcula, which are common to moſt vegetable infuſions; ſuch as the terebella. This has a longiſh body, with a cavity or groove at one end, like a gimlet: by applying, then, a ſmall ſtalk of the horſe-ſhoe geranium (or geranium zonale of Linnæus), freſh broken, to a drop of water in which theſe animalcula are ſwimming, we ſhall find that they will become torpid inſtantly; contracting themſelves into an oblong oval ſhape, with their fins extended like ſo many briſtles all round their bodies. The fins are in length about half the diameter of the middle of their bodies. Before I diſcovered this expedient, I tried to kill them by different kinds of ſalts and ſpirits; but though they were deſtroyed by this means, their fins were ſo contracted, that I could not diſtinguiſh them in the leaſt. After lying in this ſtate of torpidity for two or three minutes, if a drop of clean water is applied to them, they will recover their ſhape, and ſwim about immediately, rendering their fins again inviſible." 47 Method of diſcovering the fins of animalcules.

Fig. 3, 4, 5, 6, 7, 8, repreſent different ſpecies of animalcula infuſoria, mentioned by Mr Ellis as belonging to the genus volvox of Linnæus.

Fig. 3. repreſents the volvox ovalis, or egg-ſhaped volvox;

Animalcule. volvox; at (b) and (c) it is expreſſed in its natural ſhape; at (a) the manner in which it becomes two animals, by ſeparating acroſs the middle. This was found in the infuſion of hempſeed; but is found in other vegetable infuſions, particularly that of tea-ſeed.

Fig. 4. is the volvox torquilla, or wryneck. At (a) is repreſented its divided ſtate; at (b) and (c) its natural ſtate; this is common to moſt vegetable infuſions, as is the following:

Fig. 5. is the volvox volutans, or the roller. At (a) the animal is ſeparated, and becomes two diſtinct beings, each ſwimming about and providing for itſelf: this is often the prey of another ſpecies of this genus, eſpecially while it is weak by this ſeparation, not being ſo active for ſome time till it can recover itſelf. At (c) the animal appears to be hurt on one ſide; this impreſſion in a little time is ſucceeded by another in the oppoſite ſide, as at (b), which ſoon occaſions a diviſion. At (d) is the ſide view, and at (e) the front view, of the natural ſhape of the animal.

Fig. 6. is the volvox oniſcus, or wood-louſe. At (a) is the natural ſhape of it, as it appears full of little hairs, both at the head and tail; with thoſe at the head, it whirls the water about to draw its prey to it; the feet, which are many, are very viſible, but remarkably ſo in a ſide-view at (d). At (b) it is repreſented beginning to divide; and at (c) the animals are ready to part: in this ſtate, as if in exquiſite pain, they ſwim round and round, and to and fro, with uncommon velocity, violently agitated till they get aſunder. This was found in an infuſion of different kinds of pine branches.

Fig. 7. is the volvox terebella, or the gimlet. This is one of the largeſt of the kind, and is very viſible to the naked eye. It moves along ſwiftly, turning itſelf round as it ſwims, juſt as if boring its way. (a) and (b) are two views of its natural ſhape; (c) ſhows the manner of its dividing. When they are ſeparated, the lower animal rolls very awkwardly along, till it gets a groove in the upper part: (d) repreſents one of them lying torpid, by means of the juice of the horſe-ſhoe geranium, with its fins extended. This animal is found in many infuſions, particularly of graſs or corn.

Fig. 8. is the volvox vorax, or glutton. This animal was found in an infuſion of the Tartarian pine; it varies its ſhape very much, contracting and extending its proboſcis, turning it to and fro, in various directions, as at a, b, c, d, e. It opens its proboſcis underneath the extremity, when it ſeizes its prey. The leſs active animals, that have lately been divided, ſuch as thoſe at fig. 3. (a), and at fig. 4. (a), ſerve it as food, when they come in its way: theſe it ſwallows down inſtantly, as it is repreſented at fig. 8. h and i. At (f) it is ready to divide, and at (g) it is divided; where the hinder part of the divided animal has got a proboſcis or beak, to procure nouriſhment for itſelf, and ſoon becomes a diſtinct being from the fore part.

Thus we have given as full an account as our limits would admit, of the moſt curious kinds of animalcules that have hitherto been obſerved. We cannot, however, diſmiſs this, ſubject, without taking notice of ſome of the moſt remarkable hypotheſes which have been formed concerning their nature and origin.

Before the invention of microſcopes, the doctrine of equivocal generation, both with regard to animals and plants of ſome kinds, was univerſally received: but this inſtrument ſoon convinced every intelligent perſon, that thoſe plants which formerly were ſuppoſed to be produced by equivocal generation aroſe from ſeeds, and the animals, in like manner, from a male and female. But as the microſcope threw light upon one part of nature, it left another involved in darkneſs: for the origin of the animalcula infuſoria, or of the ſpermatic animals already mentioned, remains as yet as much unknown as that of many other kinds was when the doctrine of equivocal generation reigned in full force. Animalcule.

48 Doctrine of equivocal generation exploded.

49 Suppoſed diſcovery concerning generation.

The diſcovery of ſpermatic animalcules was thought to throw ſome light on the myſterious affair of generation itſelf, and theſe minute creatures were imagined to be each of them individuals of the ſame ſpecies with the parent. Here the infinite number of theſe animalcules was an objection, and the difficulty remained as great as before: for, as every one of theſe animalcules behoved to be produced from a male and female to explain their origin by animalcular generation in the ſame manner, was only explaining generation by itſelf.

This hypotheſis, therefore, having proved unſatisfactory, others have been invented. M. Buffon, particularly, hath invented one, by which he at once annihilates the whole animalcular world; and in this he hath been followed by ſeveral very ingenious philoſophers. For a particular account of this, ſo far as it concerns generation, we muſt refer to that article; but as he gives ſuch a particular account of his having examined the human ſemen, that we cannot doubt of his accuracy, we ſhall here contraſt his account with that of Mr Leeuwenhoek already mentioned.

50 M. Buffon's experiments on the human ſemen.

Having procured the ſeminal veſſels of a man who died a violent death, he extracted all the liquor from them while they were ſtill warm; and having examined a drop of it with a double microſcope, it had the appearance, fig. 9. Large filaments appeared, which in ſome places ſpread out into branches, and in others intermingled with one another. Theſe filaments clearly appeared to be agitated by an internal undulatory motion, like hollow tubes, which contained ſome moving ſubſtance. He ſaw diſtinctly this appearance changed for that fig. 10. Two of theſe filaments, which were joined longitudinally, gradually ſeparated from each other in the middle, alternately approaching and receding, like two tenſe cords fixed by the ends, and drawn aſunder in the middle. Theſe filaments were compoſed of globules that touched one another, and reſembled a chaplet of beads. After this, he obſerved the filament ſwelled in ſeveral places, and perceived ſmall globular bodies iſſue from the ſwelled parts, which had a vibratory motion like a pendulum. Theſe ſmall bodies were attached to the filaments by ſmall threads, which gradually lengthened as the bodies moved. At laſt, the ſmall bodies detached themſelves entirely from the filaments, drawing after them the ſmall thread, which looked like a tail. When a drop of the ſeminal liquor was diluted, theſe ſmall bodies moved in all directions very briſkly; and had he not ſeen them ſeparate themſelves from the filaments, he would, he ſays, have thought them to be animals. The ſeminal matter was at firſt too thick, but gradually became more fluid; and, in proportion as its fluidity increaſed, the filaments diſappeared.

Animalcule.

diſappeared, but the ſmall bodies became exceedingly numerous. Each of them had a long thread or tail attached to it, from which it evidently endeavoured to get free. Their progreſſive motion was extremely ſlow, during which they vibrated to the right and left, and at each vibration they had a rolling unſteady motion in a vertical direction.

At the end of two or three hours, the ſeminal matter becoming ſtill more fluid, a greater number of theſe moving bodies appeared. They were then more free of encumbrances; their tails were ſhorter; their progreſſive motion was more direct, and their horizontal motion greatly diminiſhed. In five or ſix hours, the liquor had acquired almoſt all the fluidity it could acquire without being decompoſed. Moſt of the ſmall bodies were now diſengaged from their threads; their figure was oval. They moved forward with conſiderable quickneſs, and, by their irregular motions backward and forward, they had now more than ever the appearance of animals. Thoſe that had tails adhering to them, ſeemed to have leſs vivacity than the others; and of thoſe that had no tails, ſome altered both their figures and their ſize. In twelve hours, the liquor had depoſited at the bottom of the vial a kind of aſh-coloured gelatinous ſubſtance, and the fluid at top was almoſt as tranſparent as water. The little bodies being now entirely freed from their threads, moved with great agility, and ſome of them turned round their centres. They alſo often changed their figures, from oval becoming round, and often breaking into ſmaller ones. Their activity always increaſed as their ſize diminiſhed. In 24 hours, the liquor had depoſited a greater quantity of gelatinous matter, which, being with ſome difficulty diluted in water, exhibited an appearance ſomewhat reſembling lace. In the clear ſemen itſelf only a few ſmall bodies were now ſeen moving; next day, theſe were ſtill farther diminiſhed; and after this nothing was to be ſeen but globules, without the leaſt appearance of motion. Moſt of the above-mentioned appearances are ſhown fig. 10, 11, 12, 13, 14, 15, 16. Fig. 17, and 18. repreſent an appearance of the globules in another experiment, in which they arranged themſelves in troops, and paſſed very quickly over the field of the microſcope. In this experiment they were found to proceed from a ſmall quantity of gelatinous mucilage.

From theſe experiments, M. Buffon concludes, that what have been called *ſpermatic animals*, are not creatures really endowed with life, but ſomething proper to compoſe a living creature; and he diſtinguiſhes them by the name of *organic particles*. The ſame individual kinds of animals he declares he has found in the fluids ſeparated from the ovaria of females: and for the truth of this appeals to the teſtimony of Mr Needham, who was an eye witneſs of his experiments. He alſo brings an additional proof of his doctrine from Mr Needham's obſervation on the milt of the *calmar*, a ſpecies of cuttle fiſh. Here the ſpermatic animals, at leaſt what have the only appearance of life, are vaſtly larger than in any other creature, ſo as to be plainly viſible to the naked eye. When magnified, they appear as at fig. 19. and 20. *a*. Their firſt appearance is at fig. 19. *a* and *b*, when they reſemble ſprings enclоſed in a tranſparent caſe. Theſe ſprings were equally perfect at firſt as afterwards; only in time they contracted themſelves, and became like a kind of ſcrew. The head of the caſe is

51 Needham's experiment on the milt of the calmar.

a ſpecies of valve which opens outward, and through which every thing within may be forced out. It contains, beſides, another valve *b*, a little barrel *c*, and a ſpongy ſubſtance *d e*. Thus the whole machine conſiſts of an outer tranſparent cartilaginous caſe *a*, the ſuperior extremity of which is terminated by a round head formed by the caſe itſelf, and performs the office of a valve. This external caſe contains a tranſparent tube: which includes the ſpring, a piſton or valve, a little barrel, and ſpongy ſubſtance. The ſcrew occupies the ſuperior part of the tube and caſe, the piſton and barrel are ſituated in the middle, and the ſpongy ſubſtance occupies the inferior part. Theſe machines pump the liquor of the milt; the ſpongy ſubſtance is full of this liquor; and, before the animal ſpawns, the whole milt is only a congeries of theſe bodies which have ſucked up all the liquor of it. Whenever theſe ſmall machines are taken out of the body of the animal, and put in water, or expoſed to the air, they begin to act, as repreſented fig. 19. and 20.; the ſpring mounts up, and is followed by the piſton, the barrel, and the ſpongy ſubſtance which contains the liquor: and, as ſoon as the ſpring and the tube in which it is contained begin to iſſue out of the caſe, the ſpring plaits, and the whole internal apparatus moves, till the ſpring, the piſton, and the barrel, have entirely eſcaped from the caſe. When this is effected, all the reſt inſtantly follow, and the milty liquor which had been pumped in, and confined in the ſpongy ſubſtance, runs out through the barrel. Fig. 20.

52 Concluſion againſt the exiſtence of animalcules.

According to this account, the milt of the calmar contains no animalcules; and therefore we may from analogy conclude, that the ſmall moving bodies which are to be ſeen in the ſemen of other animals, are not really creatures endowed with life. M. Buffon extends the analogy ſtill further; and concludes, that all the moving bodies which are to be found in the infuſions either of animal or vegetable ſubſtances are of a ſimilar nature. "To diſcover (ſays he) whether all the parts of animals, and all the ſeeds of plants, contained moving organic particles, I made infuſions of the fleſh of different animals, and of the ſeeds of more than 20 different ſpecies of vegetables; and after remaining ſome days in cloſe glaſſes, I had the pleaſure of ſeeing organic moving particles in all of them. In ſome they appeared ſooner, in others later; ſome preſerved their motions for months, and others ſoon loſt it. Some at firſt produced large moving globules reſembling animals, which changed their figure, ſplit, and became gradually ſmaller. Others produced only ſmall globules, whoſe motions were extremely rapid; and others produced filaments, which grew longer, ſeemed to vegetate, and then ſwelled and poured forth torrents of moving globules."

53 Baron Munchanſen's theory.

This laſt obſervation gave riſe to a new ſyſtem. Baron Munchanſen, perceiving that the laſt mentioned moving globules, after moving for ſome time, began again to vegetate, concluded that they were firſt animals and then plants. This ſtrange hypotheſis Mr Ellis has overturned in the paper already quoted; in which he aſſerts that they are no other than the ſeeds of that genus of fungi called *mucor* or *mouldineſs*, and that their motion is owing to numbers of minute animalcules attacking them for food. "Having (ſays he), at the requeſt of Dr Linnæus, made ſeveral experiments

54 Diſproved by Mr Ellis

Animalcule.

on the infuſion of muſhrooms in water, in order to prove the theory of Baron Munchauſen, that their ſeeds are firſt animals, and then plants (which he takes notice of in his Syſtem of Nature, p. 1326, under the genus of chaos, by the name of *chaos fungorum ſeminum*), it appeared evidently, that the ſeeds were put into motion by very minute animalcules, which proceeded from the putrefaction of the muſhroom: for by pecking at theſe ſeeds, which are reddiſh, light, round bodies, they moved them about with great agility in a variety of directions; while the little animals themſelves were ſcarcely viſible, till the food they had eaten had diſcovered them. The ſatisfaction I received from clearing up this point, led me into many other curious and intereſting experiments.

"The ingenious Mr Needham ſuppoſes theſe little tranſparent ramified filaments, and jointed or coralloid bodies, which the microſcope diſcovers to us on the ſurface of moſt animal and vegetable infuſions when they become putrid, to be zoophytes, or branched animals; but to me they appear after a careful ſcrutiny with the beſt glaſſes, to be of that genus of fungi called *mucor*, or *mouldineſs*; many of which Michelius has figured, and Linnæus has accurately deſcribed.

"Their vegetation is ſo amazingly quick, that they may be perceived in the microſcope even to grow and feed under the eye of the obſerver.

"Mr Needham has pointed out to us a ſpecies that is very remarkable for its parts of fructification. (See Philoſophical Tranſactions, vol. xlv. tab. 5. fig. 3. a, A.) This, he ſays, proceeds from an infuſion of bruiſed wheat.

"I have ſeen the ſame ſpecies ariſe from the body of a dead fly, which was become putrid by lying floating for ſome time in a glaſs of water, where ſome flowers had been, in the month of Auguſt 1768. This ſpecies of mucor ſends forth a maſs of tranſparent filamentous roots; from whence ariſe hollow ſtems, that ſupport little oblong oval ſeed veſſels, with a hole on the top of each. From theſe I could plainly ſee minute globular ſeeds iſſue forth in great abundance with an elaſtic force, and turn about in the water as if they were animated.

"Continuing to view them with ſome attention, I could juſt diſcover, that the putrid water which ſurrounded them was full of the minuteſt animalcula; and that theſe little creatures began to attack the ſeeds of the mucor for food, as I have obſerved before in the experiment on the ſeeds of the larger kind of fungi or muſhrooms. This new motion continued the appearance of their being alive for ſome time longer: but ſoon after, many of them aroſe to the ſurface of the water, remaining there without motion; and a ſucceſſion of them afterwards coming up, they united together in little thin maſſes, and floated to the edge of the water, remaining there quite inactive during the time of obſervation.

"As this diſcovery cleared up many doubts which I had received from reading Mr Needham's learned diſſertation, I put into the glaſs ſeveral other dead flies; by which means this ſpecies of mucor was propagated ſo plentifully, as to give me an opportunity of frequently trying the ſame experiment to my full ſatisfaction.

"Laſtly, Theſe jointed coralloid bodies, which Mr Needham calls *chaplets*, and *pearl necklaces*, I have ſeen frequently very diſtinctly. Theſe appear not only on an infuſion of bruiſed wheat when it becomes putrid, but on moſt other bodies when they throw up a viſcid ſcum and are in a ſtate of putrefaction. Theſe, then, are evidently no more than the moſt common mucor, the ſeeds of which are everywhere floating in the air; and bodies in this ſtate afford them a natural proper ſoil to grow upon. Here they ſend downwards their fine tranſparent ramified roots into the moiſture which they float upon; and from the upper part of the ſcum, their jointed coralloid branches riſe full of ſeed into little groove-like figures. When a ſmall portion of theſe branches and ſeeds are put into a drop of the ſame putrid water upon which the ſcum floats, many of theſe millions of little animalcula with which it abounds, immediately ſeize them as food, and turn them about with a variety of motions, as in the experiments on the ſeeds of the common muſhrooms, either ſingly, or two or three ſeeds connected together; anſwering exactly to Mr Needham's deſcription, but evidently without any motion of their own, and conſequently not animated."

55 Mr Buffon's opinion of different kinds of animalcules.

M. Buffon, however, is not content with denying life only to thoſe beings where the ſigns of it are the moſt equivocal; but includes in the ſame rank of organic particles, almoſt every animal too ſmall to be diſcovered by the naked eye, and even ſome of thoſe whoſe motions are evidently perceptible to the eye. "Almoſt all microſcopic animals," ſays he, "are of the ſame nature with the moving bodies in the ſeminal fluids and infuſions of animal and vegetable ſubſtances. The eels in paſte, in vinegar, &c. are all of the ſame nature, and derived from the ſame origin. There are, perhaps, as many beings that either live or vegetate, produced by a fortuitous aſſemblage of organic particles, as by a conſtant and ſucceſſive generation. Some of them, as thoſe of the calmar, are only a kind of machines, which, though exceedingly ſimple, are very active. Others, as the ſpermatic animalcules, ſeem to imitate the movements of animals. Others reſemble vegetables in their manner of growth and extenſion. There are others, as thoſe of blighted wheat, which at pleaſure can be made alternately either to live or die, and it is difficult to know to what they ſhould be compared. There are ſtill others, and in great numbers, which are at firſt a kind of animals, then become a ſpecies of vegetables, and again return alternately to their vegetable ſtate. The eels in paſte have no other origin than the union of the organic particles of the moſt eſſential part of the grain. The firſt eels that appear are certainly not produced by other eels; but though they are not propagated themſelves, they fail not to engender other living eels. By cutting them with the point of a lancet, we diſcover ſmaller eels iſſuing in great numbers out of their bodies. The body of this animal ſeems to be only a ſheath or ſac, containing a multitude of ſmaller animals, which perhaps are other ſheaths of the ſame kind, in which the organic matter is aſſimilated into the form of eels."

56 His reaſoning inconcluſive.

Though we can by no means pretend to account for the appearance of theſe animalcules, yet we cannot help obſerving, that our ignorance of the cauſe of any phenomenon is no argument againſt its exiſtence. Though we are not able to account in a ſatisfactory manner for the

Animalcule.

the origin of the native Americans, we ſuppoſe M. Buffon himſelf would reckon it abſurd to maintain that the Spaniards on their arrival there found only *organic particles* moving about in diſorder. The caſe is the very ſame with the eels in paſte. They are exceedingly minute in compariſon with us; but, with the ſolar microſcope, Mr Baker has made them aſſume a more reſpectable appearance, ſo as to have a diameter of an inch and a half, or two inches, and a length proportionable. They ſwarm up and down very briſkly; the motion of their inteſtines was plainly viſible; when the water dried up, they died with apparent agonies, and their mouths gaped very wide. Were we to find a creature of the ſize of this magnified eel, gaſping in a place where water had lately been, we certainly would never conclude it to be an *organic particle*, or a fortuitous aſſemblage of them; but a fiſh. Why then ſhould we conclude otherwiſe with regard to the eel while in its natural ſtate, than that it is a little fiſh? In reaſoning on this ſubject, we ought always to remember, that, however eſſential the diſtinction of bodies into great and ſmall may appear to us, they are not ſo to the Deity; with whom, as Mr Baker well expreſſes himſelf, "an atom is as a world, and a world but as an atom."—Were the Deity to exert his power for a little, and give a natural philoſopher a view of a quantity of paſte filled with eels, from each of whoſe bodies the light was reflected as when it paſſes through a ſolar microſcope; inſtead of imagining them organic particles, the paſte would appear like a little mountain; he would probably look upon the whole as a monſtrous aſſemblage of ſerpents, and be afraid to come near them. Wherever, therefore, we diſcover beings to appearance endowed with the principle of ſelf-preſervation, or whatever elſe we make the characteriſtic of animals, neither the ſmallneſs of their ſize, nor the impoſſibility of our knowing how they come there, ought to cauſe us doubt of their being really animated.—At the ſame time, it muſt alſo be remembered, that *motion* is not always a characteriſtic of animal life, even though the moving bodies ſhould avoid one another, or any ſeeming obſtacle placed in their way. We know, that inanimate bodies, when electrified, will avoid others endowed with an electricity of the ſame kind, and adhere to thoſe which have the oppoſite one. As we are by no means acquainted with the utmoſt powers of electricity, but on the contrary, from what we do know of it have all the reaſon in the world to conclude that it can produce effects utterly beyond our comprehenſion, it is impoſſible for us to know what ſhare it may have in producing the motions obſerved in vegetable infuſions, or in the ſemen of animals.—We may alſo further obſerve, that though in Mr Ellis's experiment of the boiled potato he took it for granted that every ſeed of animal life would be deſtroyed by the boiling water, yet even this cannot be proved; nay, on the contrary, it hath been proved by undeniable experiments, that the human body itſelf hath endured a heat of 240 degrees of Fahrenheit (28 degrees above that of boiling water) without injury. The eggs of theſe animalcula might therefore be ſtrong enough to reſiſt the heat hitherto uſed in Mr Ellis's or any other experiment.

A conſiderable objection to the exiſtence of animalcules in the ſemen, or any other part of animal bodies, muſt ariſe from the total excluſion of air, which is found ſo neceſſary to the life of larger animals. Some inſtances, however, have been obſerved of large animals being found in ſuch ſituations as they could not poſſibly have enjoyed the leaſt benefit from the air for [illegible] a great number of years; and in this ſtate they have [illegible] not only lived, but lived much longer than they would otherwiſe have done.

Animalcule.

27

In Toulon harbour and road, are found ſolid hard ſtones, and perfectly entire; containing, in different cells, ſecluded from all communication with the air, ſeveral living ſhell fiſh, of an exquiſite taſte, called *Dactyli*, i. e. Dates: to come at theſe fiſh, the ſtones are broken with mauls. Alſo, along the coaſt of Ancona, in the Adriatic, are ſtones uſually weighing about 50 pounds, and ſometimes even more; the outſide rugged, and eaſily broken, but the inſide ſo hard, as to require a ſtrong arm and an iron maul to break them; within them, and in ſeparate niches, are found ſmall ſhell fiſh, quite alive, and very palatable, called *Solenes* or *Cappe lunghe*. Theſe facts are atteſted by Ginanni, Blondel, Mavol, the learned biſhop of Sulturara, and more particularly by Aldrovandi a phyſician of Bologna. The two latter ſpeak of it as a [illegible] fact which they themſelves ſaw.

In the volume for 1719, of the Academy of Sciences at Paris, is the following paſſage:

"In the foot of an elm, of the bigneſs of a pretty corpulent man, three or four feet above the root, and exactly in the centre, has been found a live toad, middle ſized, but lean, and filling up the whole vacant ſpace: no ſooner was a paſſage opened, by ſplitting the wood, than it ſcuttled away very haſtily: a more firm and ſound elm never grew; ſo that the toad cannot be ſuppoſed to have got into it. The egg whence it was formed, muſt, by ſome very ſingular accident, have been lodged in the tree at its firſt growth. There the creature had lived without air, feeding on the ſubſtance of the tree, and growing only as the tree grew. This is atteſted by Mr Hubert, profeſſor of philoſophy at Caen."

The volume for the year 1731 has a ſimilar obſervation, expreſſed in theſe words:

"In 1719, we gave an account of a fact, which, though improbable, is well atteſted; that a toad had been found living and growing in the ſtem of a middling elm, without any way for the creature to come out or to have got in. M. Seigne, of Nantes, lays before the academy a fact juſt of the very ſame nature, except that, inſtead of an elm, it was an oak, and larger than the elm, which ſtill heightens the wonder. He judges, by the time requiſite for the growth of the oak, that the toad muſt have ſubſiſted in it, without air, or any adventitious aliment, during 80 or 100 years. M. Seigne ſeems to have known nothing of the fact in 1719."

With the two foregoing may be claſſed a narrative of Ambroſe Parée, chief ſurgeon to Henry III. king of France, who, being a very ſenſible writer, relates the following fact, of which he was an eye witneſs:

"Being (ſays he) at my ſeat, near the village of Meudon, and [illegible] king a quarryman whom I had ſet to break ſome very large and hard ſtones; in the middle of one we found a huge toad, full of life, and without any viſible aperture by which it could get

Animalcule, Animated.

there. I began to wonder how it received birth, had grown, and lived; but the labourer told me, it was not the firſt time he had met with a toad, and the like creatures, within huge blocks of ſtone, and no viſible opening or fiſſure."

Obſervations of living toads, found in very hard and entire ſtones, occur in ſeveral authors, particularly Baptiſt Fulgoſa doge of Genoa, the famous phyſicians Agricola and Horſtius, and Lord Verulam: others give very ſpecious accounts of ſnakes, frogs, crabs, and lobſters, being found alive, encloſed within blocks of marble, rocks, and large ſtones.

An inſtance ſimilar to theſe, of the truth of which we have no reaſon to doubt, was obſerved in this country in the year 1773, where a large toad was found in the middle of a piece of coal having not the leaſt viſible crack or fiſſure.

58 The ſubject ſtill obſcure.

Upon the whole, therefore, though philoſophers are not yet able to diſcover how theſe minute creatures are produced; yet, that there really are animals much ſmaller than what we can diſcern with our naked eye, ſeems to be indiſputable. The ſubject, however, is ſtill evidently obſcure, and will no doubt require the utmoſt attention of philoſophers, as well as further improvements in the conſtruction of microſcopes, fully to inveſtigate it.

Animalcula are ſaid to be the cauſe of various diſorders. The itch, from ſeveral experiments, is affirmed to be a diſorder ariſing from the irritations of a ſpecies of animalcula found in the puſtules of that ailment; whence the communication of it by contact from one to another is eaſily conceived, as alſo the reaſon of the cure being effected by cutaneous applications. On this foundation ſome have attributed the ſmallpox and meaſles, and infectious diſeaſes; others the epilepſy, &c. to animalcules. Langius goes farther, and pretends to reduce all diſeaſes in general to the ſame principle. A late writer at Paris, who aſſumed the title of an Engliſh phyſician, has done more. He not only accounts for all diſeaſes, but for the operations of all medicines, from the hypotheſis of animalcules. He has peculiar animals for every diſeaſe; ſcorbutic animalcules, podagrical animalcules, variolous animalcules, &c. all at his ſervice. *Journ. des Sçav.* tom. lxxxii. p. 535, &c.

But as moſt diſcoveries in natural philoſophy have laid a foundation for the warm imaginations of ſome men to form viſionary theories, to the great prejudice of real knowledge; ſo thoſe relating to animalcula have been drawn in, however improperly, to ſupport the moſt whimſical and chimerical ſyſtems.

Animalcules, Inviſible.—Naturaliſts ſuppoſe another ſpecies or order of inviſible animalcules, viz. ſuch as eſcape the cognizance even of the beſt microſcopes, and give many probable conjectures in relation to them. Reaſon and analogy give ſome ſupport to the exiſtence of infinite imperceptible animalcules. The naked eye, ſay ſome, takes in from the elephant to the mite; but there commences a new order reſerved only for the microſcope, which comprehends all theſe from the mite to thoſe 27 millions of times ſmaller; and this order cannot be yet ſaid to be exhauſted, if the microſcope be not arrived at its laſt perfection. See further on this ſubject the article Microscope.

ANIMATED, or Animate, in a general ſenſe, denotes ſomething endowed with animal life. It alſo imports a thing to be impregnated with vermine or animalcules. Animated || Anjou.

Animated Horſe Hairs. See *Horse Hairs.*

ANIMATION ſignifies the informing an animal body with a ſoul.—The different hypotheſes of phyſicians and philoſophers, concerning the time of animation, have had their influence on the penal laws made againſt artificial abortions: it having been made capital to procure miſcarriage in the one ſtate, while in the other it was only deemed a venial crime. The emperor Charles V. by a conſtitution publiſhed in 1532, put the matter on another footing; inſtead of the diſtinction of an animated and unanimated fœtus, he introduced that of a vital and non-vital fœtus, as a thing of more obvious and eaſy deciſion, and not depending on any ſyſtem either of creation, traduction, or infuſion. Accordingly a fœtus is ſaid, in a legal ſenſe, to be animated, when it is perceived to ſtir in the womb; which uſually happens about the middle of the term of geſtation.

ANIME, in *Heraldry*, a term uſed when the eyes of a rapacious creature are borne of a different tincture from the creature itſelf.

Anime, a reſin exſuding from the trunk of a large American tree, called by Piſo *jetaiba*, by the Indians *courbaril*, (a ſpecies of Hymenæa). This reſin is of a tranſparent amber colour, a light agreeable ſmell, and little or no taſte. It diſſolves entirely, but not very readily, in rectified ſpirit of wine; the impurities, which are often in large quantity, remaining behind. The Brazilians are ſaid to employ anime in fumigations for pains and aches proceeding from a cold cauſe: with us, it is rarely, if ever, made uſe of for any medicinal purpoſes.

ANIMETTA, among eccleſiaſtical writers, denotes the cloth wherewith the cup of the euchariſt is covered.

ANINGA, in commerce, a root which grows in the Antilles iſlands, and is pretty much like the China plant. It is uſed by ſugar bakers for refining the ſugar.

ANJOU, a province and duchy of France before the revolution, bounded on the eaſt by Touraine, on the ſouth by Poictou, on the weſt by Bretagne, and on the north by Maine. It is now included under the departments of the Mayne and Loire, and the Sarte and Mayenne. It is 70 miles in length, and in breadth 60. Through this province run five navigable rivers: the Loire, which divides it into two parts; the Vienne, the Toue, the Mayenne, and the Sarte.

The air is temperate, and the country agreeably diverſified with hills and meadows. There are 33 foreſts of oak trees mixed with beech. The country produces white wine, wheat, barley, rye, oats, peaſe, beans, flax, hemp, walnuts, and ſome cheſnuts. In Lower Anjou they make cyder. There are fruit trees of all kinds, and paſture proper for horſes. The greateſt riches of the province conſiſts in cows, oxen, and ſheep. There are ſeveral coal and iron mines; and yet there are but two forges in the whole province. There are quarries of marble and of ſlate; as well as quarries of white ſtone, proper for building, on the ſide of the river Loire. Here are alſo ſeveral ſaltpetre works and ſome glaſs-houſes. The remarkable towns, beſides

C. Bell, from Nat. sculpt. 1st.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

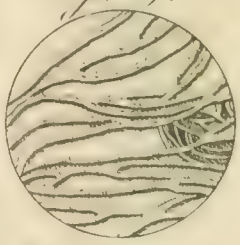
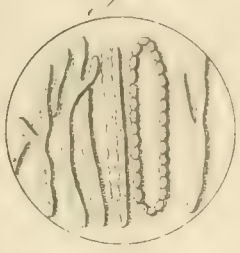


Fig. 10.



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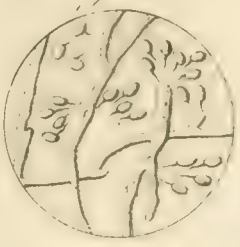
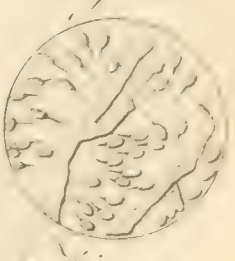


Fig. 12.

Fig. 13.



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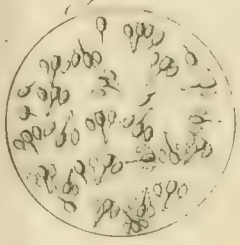
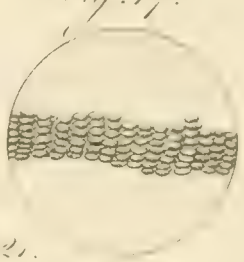


Fig. 15.

Fig. 16.

Fig. 17.



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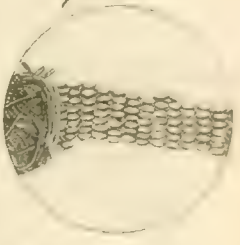

Fig. 19.

Fig. 21.

Spermatic Animalcula of the Dog, according to the first Edition of Leuwenhoek.

Spermatic Animalcula of the Rabbit.

Fig. 22.

ANGUINUM OVUM.

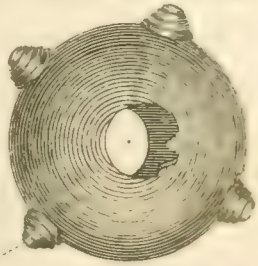

Fig. 23.

AIR-ROMETER.

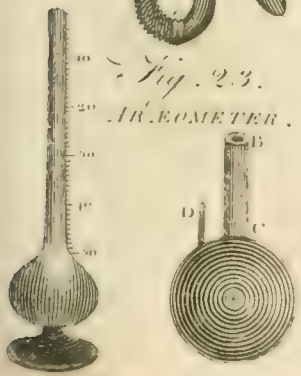

Fig. 20.

Neele Printseller Sculpt.

Anio ‖ Anna.

beſides Angers the capital, are Saumur, Briſac, Pons de Cea, La Fleche, and Beaufort.

ANIO, (Cicero, Horace, Priſcian); ANIEN, (Statius); now *il Teverone*: a river of Italy, which falls into the Tiber, three miles to the north of Rome, not far from Antemnæ. It riſes in a mountain near Treba, (Pliny); and running through the country of the Æquiculi, or Æqui, it afterwards ſeparated the Latins from the Sabines; but nearer its mouth, or confluence, it had the Sabines on each ſide. It forms three beautiful lakes in its courſe, (Pliny). In the territories of Tibur it falls from a great height, and there forms a very rapid cataract; hence the epithet *præceps*, and hence the ſteam cauſed by its fall, (Horace). *Anienus* is the epithet formed from it, (Virgil, Propertius). *Anienus* is alſo the god of the river, (Propertius, Statius).

ANISUM or ANISE. See PIMPINELLA, BOTANY *Index*.

ANKER, a liquid meaſure at Amſterdam. It contains about 32 gallons Engliſh meaſure.

ANKLE, in *Anatomy*, the joint which connects the foot to the leg.—We have an account of the menſes being regularly evacuated at an ulcer of the ankle, *Edin. Med. Obſ.* vol. iii. art. 29.

ANN, or ANNAT, in *Scots Law*, is half a year's ſtipend, which the law gives to the executors of miniſters of the church of Scotland, over and above what was due to the miniſter himſelf for his incumbency.

ANNA, one of the three principalities into which Arabia Deſerta is divided.

ANNA, one of the chief cities of the above principality, and formerly a famed mart-town, is ſituated in Lat. 33. 57. and E. Long. 42. 10. on the river Euphrates, in a fruitful and pleaſant ſoil. It has two ſtreets, which are divided by the river. That on the Meſopotamia ſide is about two miles long, but thinly peopled, and by none but tradeſmen; that on the oppoſite ſide is about ſix miles in length, and it is there that the principal inhabitants of the city dwell. Every houſe has ſome ground belonging to it; and theſe grounds are loaded with noble fruit trees, as lemons, oranges, citrons, quinces, figs, dates, pomegranates, olives, all very large and in great plenty. Some of the flat grounds are ſown with corn and other grain, which yield likewiſe a conſiderable crop. This city is the common rendezvous of all the robbers that infeſt the country, and from which they diſperſe themſelves into all parts of the deſert. Here they meet to conſult; here they hold their grand council, and deliberate where to rob next with ſucceſs. It is with great difficulty that the Turkiſh aga, and the janizaries who are kept here, can levy the tribute impoſed by the Turks on all the commodities carried through this city, which is one of the great thoroughfares for the paſſing of the caravans that go to and from Aleppo, Tripoli, Damaſcus, Bagdad, and ſome other parts of the Turkiſh empire.

ANNA *Comnena*, daughter of the emperor Alexius Comnenus I. was not leſs diſtinguiſhed by her elevated rank than by her mental qualifications. Her ſuperiority of mind began early to diſplay itſelf. Deſpiſing and neglecting the effeminacy and voluptuouſneſs of the court in which ſhe was educated, ſhe directed her attention to literary purſuits. Indulging her favourite ſtudies, ſhe ſolicited the acquaintance of the more eminent philoſophers of that period.

But the purſuits of literature did not induce her entirely to abandon ſociety; ſhe gave her hand to Nicephorus Bryennius, a young nobleman of a reſpectable family. This accompliſhed woman was, however, actuated with unjuſtifiable ambition; and, during the laſt illneſs of her father, ſhe united with the empreſs Irene, in attempting to prevail upon that monarch to diſinherit his own ſon, and give the crown to her huſband. The affection and virtue of the father prevailed over female addreſs and intrigue. But the ambition of Comnena was not diminiſhed; for ſhe entered into a conſpiracy to depoſe her brother; and when her huſband diſplayed a timidity and heſitation in this unjuſt enterpriſe, ſhe exclaimed, that "Nature had miſtaken their ſexes, for he ought to have been the woman."

Either through the vigilance of her brother, or the timidity of her huſband, the treaſonable plot was diſcovered, and Anna puniſhed with the confiſcation of all her property. But generoſity has an opportunity of diſplaying its real nature when an enemy is vanquiſhed; thus was the generoſity of her brother diſplayed on the preſent occaſion, by returning all her property. Aſhamed, however, of her baſe conduct, ſhe retired from court, and never more poſſeſſed any influence there. Diſappointed ambition took ſhelter among the walks of literature, and ſhe employed herſelf in her ſolitude in writing the hiſtory of her father's reign. This production of her pen is ſtill extant, and compoſes a part of the collection of the Byzantine hiſtorians. The ſtores of rhetoric are ranſacked to embelliſh this work, and every effort made to enrich it with ſcience; but the general complexion of it is rather like an apology, than an impartial narrative. It muſt, however, be acknowledged, that ſhe is not more partial than many other Latin hiſtorians, and that her hiſtory contains many valuable facts and obſervations. (*Gen. Biog.*)

ANNABON. See ANNOBON.

ANNALE, in the church of Rome, a term applied to the maſſes celebrated for the dead during a whole year.

ANNALIS CLAVUS, the nail which the prætor, conſul, or dictator, drove into the wall of Jupiter's temple annually upon the ides of September, to ſhow the number of years. But this cuſtom was ſuperſeded by reckoning years by conſulſhips. The ceremony was ſometimes performed to avert the plague, &c.

ANNALS, in matters of literature, a ſpecies of hiſtory, which relate events in the chronological order wherein they happened. They differ from perfect hiſtory in this, that annals are but a bare relation of what paſſes every year, as a journal is of what paſſes every day; whereas hiſtory relates not only the tranſactions themſelves, but alſo the cauſes, motives, and ſprings of actions. Annals require nothing but brevity; hiſtory demands ornament.—Cicero informs us of the origin of annals. To preſerve the memory of events the *Pontifex Maximus*, ſays he, wrote what paſſed each year, and expoſed it on tables in his own houſe, where every one was at liberty to read: this they called

Annales

Annan. *annales maximi*; and hence the writers who imitated this ſimple method of narrating facts were called *annaliſts*.

ANNAN, the capital of Annandale, a diviſion of Dumfrieſhire in Scotland; a ſmall town, containing 500 or 600 inhabitants, and ſituated on a river of the ſame name, in W. Long. 3°. N. Lat. 54. 40. This place, which is a royal borough, has ſome trade in wine, and exports annually between 20 and 30,000 Winchester buſhels (10 and 15,000 bolls) of corn. Veſſels of about 250 tons can come within half a mile of the town; and of 60, as high as the bridge; which conſiſts of five arches, defended by a gateway. A fabric for carding and ſpinning of cotton has lately been erected, and the town begins to increaſe. Here was formerly a caſtle; which was built by the Bruces, after they became lords of Annandale. Upon the death of David II. the ſon of King Robert, in 1371, this caſtle (Lochmaben), and the lordſhip of Annandale, came to Thomas Randolph earl of Murray, and went with his ſiſter Agnes to the Dunbars, earls of March: after their forfeiture it went to the Douglaſſes, who alſo loſt it by the ſame fate; and then having come to Alexander duke of Albany, he, for rebelling againſt his brother King James III. and plundering the fair of Lochmaben in 1484, was alſo forfeit. Since which time it continued in the hands of the king, and became the great key of the weſt border.

The ſtewarty or diſtrict of Annandale, of which Lochmaben caſtle was the chief fortalice, is a fertile vale, 24 miles long, and about 14 miles broad. From its vicinity to England, and the continual incurſions and predatory wars of the borderers, the greateſt part of it was uncultivated and common: but ſince the beginning of the preſent century, or rather within the laſt thirty years, all theſe waſtes and commons have been divided and brought into culture, and the country has aſſumed a new appearance; which may be aſcribed not only to the diviſion of the commons, but likewiſe to the improvement made in the roads, and particularly in the great weſtern road from Edinburgh to London by Moffat, Gratney, and Carliſle, running through this vale, and carried on by ſome gentlemen of the country, after they had obtained an act of parliament for levying a toll to defray the expence of making and keeping it in repair.

Annandale formed a part of the Roman province of Valentia; and Severus's wall ending here, it abounds with Roman ſtations and antiquities. The camps at Birrens in Middlebie, and on the hill of Burnſwark, are ſtill entire, and their form is preſerved; and the traces and remains of a military road are now viſible in different parts of the country. The ruins of the houſe or caſtle of Auchincaſs, in the neighbourhood of Moffat, once the ſeat of that potent baron, Thomas Randolph, earl of Murray, lord of Annandale, and regent of Scotland in the minority of David II. covers above an acre of ground, and even now conveys an idea of the plan and ſtrength of the building. The ancient caſtle of Comlongan, formerly belonging to the Murrays, earls of Annandale, and now to Lord Stormont, is ſtill in a tolerable ſtate of preſervation; but except this caſtle and that of Hoddam, moſt of the other old caſtles and towers are now taken down, or in ruins.

Annandale is a marquiſate belonging to the Johnſtones, and the chief of the name. Annand, Annano.

ANNAND, William, dean of Edinburgh in Scotland, the ſon of William Annand miniſter of Air, was born at Air in 1633. Five years after, his father was obliged to quit Scotland with his family, on account of their loyalty to the king, and adherence to the epiſcopal government eſtabliſhed by law in that country. In 1651, young Annand was admitted a ſcholar in Univerſity college in Oxford; and though he was put under the care of a preſbyterian tutor, yet he took all occaſions to be preſent at the ſermons preached by the loyal divines in and near Oxford. In 1656, being then bachelor of arts, he received holy orders from the hands of Dr Thomas Fulwar, biſhop of Ardfert or Kerry in Ireland, and was appointed preacher at Weſton on the Green near Biceſter in Oxfordſhire, where he met with great encouragement from Sir Francis Norris, lord of that manor. After he had taken the degree of maſter of arts, he was preſented to the vicarage of Leighton-Buzzard in Bedfordſhire; where he diſtinguiſhed himſelf by his edifying manner of preaching, till 1662, when he went into Scotland, in quality of chaplain to John earl of Middleton, the king's high commiſſioner to the church of that kingdom. In the latter end of the year 1663, he was inſtituted to the Tolbooth church at Edinburgh, and from thence was removed ſome years after to the Tron church of that city, which is likewiſe a prebend. In April 1676, he was nominated by the king to the deanery of Edinburgh; and in 1685, he commenced doctor of divinity in the univerſity of St Andrew's. He wrote, 1. *Fides Catholica*; or, The Doctrine of the Catholic Church, in eighteen grand Ordinances, referring to the word, ſacraments, and prayer, in purity, number, and nature, catholically maintained, and publicly taught, againſt heretics of all ſorts. Lond. 1671-2, 4to. 2. Solutions of many proper and profitable queſtions, ſuitable to the nature of each Ordinance, &c. printed with the Fides Catholica. 3. *Panem Quotidianem*; or, A ſhort Diſcourſe, tending to prove the legality, decency, and expediency, of ſet forms of prayers in the Churches of Chriſt, with a particular Defence of the Book of Common Prayer of the Church of England. Lond. 1661, 4to. 4. *Pater Noſter*, Our Father; or, The Lord's Prayer explained, the ſenſe thereof, and duties therein, from Scripture, Hiſtory, and the Fathers, methodically cleared, and ſuccinctly opened. Lond. 1670, 8vo. 5. *Myſterium Pietatis*; or, The Myſtery of Godlineſs, &c. Lond. 1672, 8vo. 6. *Doxologia*; or, Glory to the Father, the Church's Hymn, reduced to glorifying the Trinity. Lond. 1672, 8vo. 7. *Dualitas*; or, A twofold ſubject diſplayed and opened, conducible to godlineſs and peace in order: Firſt, *Lex loquens*, the honour and dignity of magiſtracy, with the duties thereupon, &c.; Secondly, *Duorum Unitas*; or, The agreement of magiſtracy and miniſtry at the election of the honourable magiſtrates at Edinburgh and opening of the Dioceſan Synod of the Reverend Clergy there. Edin. 1674, 4to. Dr Annand died the 13th of June 1689, and was honourably interred in the Grey Friars church in Edinburgh.

ANNANO, a ſtrong fort of Italy, in the duchy of Milan.

Annapolis II Anne.

Milan. It has been twice taken by the French; but was reſtored to the duke of Savoy in 1706. It is ſeated on the river Tanaro, in E. Long. 8. 30. N. Lat. 44. 40.

ANNAPOLIS, the chief town in Maryland, in North America; which as yet is but mean, becauſe the people in this province chooſe to live on their plantations, as in Virginia. St Mary's was once the capital of the province of Maryland, and the town of Annapolis was known by the name of *Severn*. It received its preſent name in 1694, when it was made a port town, and the reſidence of a collector and naval officer. W. Long. 78. 10. N. Lat. 38. 25.

ANNAPOLIS ROYAL, a town of Nova Scotia, is ſeated in the bay of Fundy; and, though a mean place, was formerly the capital of the province. It has one of the fineſt harbours in America, capable of containing 1000 veſſels at anchor in the utmoſt ſecurity. The place is alſo protected by a fort and garriſon. At the bottom of the harbour is a point of land, which divides two rivers; and on each ſide there are pleaſant meadows, which in ſpring and autumn are covered with all ſorts of freſh-water fowl. There is a trade carried on by the Indians with furs, which they exchange for European goods. W. Long. 64. 5. N. Lat. 45. 10.

ANNATES, among eccleſiaſtical writers, a year's income of a ſpiritual living.

Theſe were, in ancient times, given to the pope through all Chriſtendom, upon the deceaſe of any biſhop, abbot, or pariſh clerk, and were paid by his ſucceſſor. At the Reformation they were taken from the pope, and veſted in the king; and, finally, Queen Anne reſtored them to the church, by appropriating them to the augmentation of poor livings.

ANNE, queen of Great Britain, ſecond daughter of King James II. by his firſt wife, Anne Hyde, was born in 1664. In 1683, ſhe married George, prince of Denmark, by whom ſhe had ſeveral children, but none of them arrived at the age of maturity. On the death of King William, ſhe aſcended the throne, A. D. 1702, and her reign comprehends one of the moſt illuſtrious periods of Engliſh hiſtory. Poſſeſſed, however, of a very feeble character, which did not permit her to act for herſelf, this period is the reign of her counſellors, and favourites; and ſhe exhibited no decided inclination which could influence ſtate affairs, except a ſtrong deſire for tory principles, both in church and ſtate. In the commencement of her reign, being entirely governed by the ducheſs of Marlborough, ſhe was induced to follow out the premeditated deſigns of her predeceſſors with reſpect to Louis XIV. king of France, and for many years, repeated ſucceſs attended her armies with glory. Theſe were at length after a fruitleſs protraction of hoſtilities, terminated by the peace of Utrecht, in 1713. This peace was chiefly owing to the acquired influence of a female favourite of the oppoſite party. By an act of the legiſlature in the year 1706, the union of the Engliſh and Scottiſh nations was formed, which event contributed more than the former towards the proſperity of the kingdom. Yet theſe ſucceſsful events prevented not the contention of parties which prevailed during the greateſt part of her reign. And about the cloſe of it, when this ſpirit was juſt on the eve of breaking into a flame, the queen manifeſted an ardent deſire, that the exiled part of her family ſhould ſucceed to the throne, and ſo conduced towards the ſuperiority of the tories, as that they were inclined to puſh to the utmoſt extremity their plans, with reſpect to the government both of the church and ſtate. The death of Queen Anne in Auguſt 1714, of a dropſy, in the fifteenth year of her age, and thirteenth of her reign, was therefore, equally to the diſappointment of the one, and to the ſatisfaction of the other. In her private ſtation ſhe ſupported the character of an amiable woman, and not devoid of underſtanding, although her indolence and yielding temper prevented her from exerting it. She was generally well beloved by her ſubjects, whoſe prejudices coincided with her own, and the title of the *Good Queen Anne* beſt expreſſes their ſentiments. Although her own diſpoſitions and accompliſhments had no ſhare in the honour, yet this age was rendered a ſort of Auguſtan age of Britiſh literature, on account of the ſeveral eminent writers who flouriſhed under her reign (*Gen. Biog.*)

Anne.

ANNE Boleyn, queen of Henry VIII. king of England, daughter of Sir Thomas Boleyn, a nobleman of a powerful family, and numerous alliances. The daughter of the duke of Norfolk was her mother, and during the reign of the former king her father had been honoured with ſeveral embaſſies. Mary the king's ſiſter, who married Lewis XII. king of France, carried over this lady with her at an early age, where ſhe imbibed the freedom, the vivacity, and the openneſs of manners of that nation. After the death of Lewis, that queen returned to England, and Anne continued to attend her royal miſtreſs. Having ſome time after left her ſervice, ſhe was introduced into the family of the ducheſs of Alençon. In addition to all her acquired accompliſhments, ſhe poſſeſſed the greateſt perſonal elegance, and was highly famed in that age.

Hiſtory does not explicitly mention whether or not, it was on her account, but upon her return to England the king expreſſed his ſcruples concerning his union with Catharine of Arragon. Enamoured, however, of Anne, he expreſſed his attachment to her; but ſhe was poſſeſſed of too much virtue and policy, to confer any improper favours. This prudent and virtuous reſtraint only increaſed the paſſion of Henry: and placing her at court, he diſtinguiſhed her by many marks of royal favour. The impetuous king at length came to the reſolution to divorce his queen, to make way for his favourite Anne. In this inſtance, the injury done to that queen proved the cauſe of the final ſeparation of England from the dominion of the pope. Various delays and difficulties occurring to the divorce, Henry privately married Anne during the month of November 1532, and in April following he publicly declared her queen of England. The famous queen Elizabeth was the firſt fruits of this marriage, who was born the September following. For ſome time ſhe enjoyed a conſiderable ſhare of the royal favour, and ſhe made uſe of that influence in ſubduing the haughty prelate Wolſey, and widening the breach between the king and the pope. But this favour was not of long continuance; for the king, ever varying in his temper, and diſappointed at her being brought to bed of a dead male child, imbibed a new paſſion for Jane Seymour; and troubled at the evil inclinations of the catholics, he allowed the jealouſy of conjugal affection to enter his boſom, which her thoughtleſs demeanour tended to

St Anne's day. Annealing.

a great meaſure to realize. The king's jealouſy ſtill increaſing, ſhe was accuſed of adultery with ſeveral of the houſehold officers, and even with her own brother, Lord Rochfort. She was accordingly tried on a charge of high treaſon, and although proof was very ſcanty, yet ſhe was condemned to be beheaded; which ſentence was executed in May 1536. Her behaviour on that occaſion was a ſingular mixture of firmneſs and unuſual levity. She avowed being guilty of many exceſſes, yet to the laſt reſolutely denied any ſerious guilt. Although her character has been greatly depreciated by ſeveral authors, yet a letter written by her to the king after condemnation, gives a much higher idea of her character than theſe partial accounts would endeavour to convey.

The important part which ſhe and her daughter acted in the Reformation has drawn upon her memory many malignant and vicious ſtories, by thoſe of the catholic party, who were likewiſe induced to this by the expectation of being conducive to the injury of Proteſtantiſm, by ſtigmatizing the various characters and motives of its promoters. Theſe various accounts are however, for the moſt part refuted by facts univerſally known, or have no evidence or probability by which they may be ſupported. Reſpecting her innocence of the charge on which ſhe loſt her life, it is a matter of uncertainty, yet it appears to be leſs certain that ſhe was guilty than that her huſband was a bloody and capricious tyrant. (*Gen. Biog.*)

St Anne's Day, a feſtival of the Chriſtian church, celebrated by the Latins on the 26th of July, but by the Greeks on the 9th of December. It is kept in honour of Anne or Anna, mother of the Virgin Mary.

ANNEALING, by the workmen called *nealing*, is particularly uſed in making glaſs: it conſiſts in placing the bottles, &c. whilſt hot, in a kind of oven or furnace, where they are ſuffered to cool gradually: they would otherwiſe be too brittle for uſe.—Metals are rendered hard and brittle by hammering: they are therefore made red hot, in order to recover their malleability; and this is called *nealing*.

The difference between unannealed and annealed glaſs, with reſpect to brittleneſs, is very remarkable. When an unannealed glaſs veſſel is broken, it often flies into a ſmall powder, with a violence ſeemingly very unproportioned to the ſtroke it has received. In general, it is in greater danger of breaking from a very ſlight ſtroke than from one of ſome conſiderable force. One of thoſe veſſels will often reſiſt the effects of a piſtol bullet dropt into it from the height of two or three feet; yet a grain of ſand falling into it will make it burſt into ſmall fragments. This takes place ſometimes immediately on dropping the ſand into it: but often the veſſel will ſtand for ſeveral minutes after, ſeemingly ſecure; and then, without any new injury, it will fly to pieces. If the veſſel be very thin, it does not break in this manner, but ſeems to poſſeſs all the properties of annealed glaſs.

The ſame phenomena are ſtill more ſtrikingly ſeen in glaſs drops or tears. They are globular at one end, and taper to a ſmall tail at the other. They are the drops which fall from the melted maſs of glaſs on the rods on which the bottles are made. They drop into the tubs of water which are uſed in the work; the greater part of them burſt immediately in the water. When thoſe that remain entire are examined, they diſcover all the properties of unannealed glaſs in the higheſt degree. They will bear a ſmart ſtroke on the thick end without breaking; but if the ſmall tail be broken, they burſt into ſmall powder with a loud exploſion. They appear to burſt with more violence, and the powder is ſmaller, in an exhauſted receiver than in the open air. When they are annealed, they loſe theſe properties. Annealing.

Glaſs is one of thoſe bodies which increaſe in bulk when paſſing from a fluid to a ſolid ſtate. When it is allowed to cryſtallize regularly, the particles are ſo arranged, that it has a fibrous texture: it is elaſtic, and ſuſceptible of long-continued vibrations; but when a maſs of melted glaſs is ſuddenly expoſed to the cold, the ſurface cryſtallizes, and forms a ſolid ſhell round the interior fluid parts: this prevents them from expanding when they become ſolid. They, therefore, have not the opportunity of a regular cryſtallization; but are compreſſed together with little mutual coheſion: On the contrary, they preſs outward to occupy more ſpace, but are prevented by the external cruſt. In conſequence of the effort of expanſion in the internal parts, the greater number of glaſs drops burſt in cooling; and thoſe which remain entire are not regularly cryſtallized. A ſmart ſtroke upon them communicates a vibration to the whole maſs, which is nearly ſynchronous in every part: and therefore the effort of expanſion has little more effect than if the body were at reſt; but the ſmall tail and the ſurface only are regularly cryſtallized. If the tail be broken, this communicates a vibration along the cryſtallized ſurface, without reaching the internal parts. By this they are allowed ſome expanſion; and overcoming the coheſion of the thin outer ſhell, they burſt it, and are diſperſed in powder.

In an unannealed glaſs veſſel, the ſame thing takes place. Sometimes the vibration may continue for a conſiderable time before the internal parts overcome the reſiſtance. If the veſſel be very thin, the regular cryſtallization extends through the whole thickneſs; or at leaſt the quantity of compreſſed matter in the middle is ſo inconſiderable as to be incapable of burſting the external plate.

By the proceſs of annealing, the glaſs is kept for ſome time in a ſtate approaching to fluidity; the heat increaſes the bulk of the cryſtallized part, and renders it ſo ſoft, that the internal parts have the opportunity of expanding and forming a regular cryſtallization.

A ſimilar proceſs is now uſed for rendering kettles and other veſſel, of caſt iron leſs brittle: of it the ſame explanation may be given. The greater number of metals diminiſh in bulk when they paſs from a fluid to a ſolid ſtate; iron, on the contrary, expands.

When caſt iron is broken, it has the appearance of being compoſed of grains: forged or bar iron appears to conſiſt of plates. Forged iron has long been procured, by placing a maſs of caſt iron under large hammers, and making it undergo violent and repeated compreſſion. A proceſs is now uſed for converting caſt iron into forged, by heat alone. The caſt iron is placed in an air furnace, and kept for ſeveral hours in a degree of heat, by which it is brought near to a fluid ſtate. It is then allowed to cool gradually, and is found to be converted into forged iron. This proceſs

Annealing. is conducted under a patent; although, if Reaumur's experiments upon caſt iron be conſulted, it will appear not to be a new diſcovery.

By theſe experiments it is aſcertained, that if caſt iron be expoſed for any length of time to a heat conſiderably below its melting point, the texture and properties are not changed: but if it be kept in a heat near the melting point, the ſurface ſoon becomes lamellated like forged iron; and the lamellated ſtructure extends farther into the maſs in proportion to the length of time in which it is expoſed to that degree of heat. When it is continued for a ſufficient time, and then allowed to cool gradually, it is found to poſſeſs the lamellated ſtructure throughout.

Caſt iron, then, is brittle, becauſe it has not had the opportunity of cryſtallizing regularly. When it is expoſed to cold while fluid, the ſurface becoming ſolid, prevents the inner parts from expanding and arranging themſelves into regular cryſtals. When caſt iron is brought near to the melting point, and continued for a ſufficient length of time in that degree of heat, the particles have the opportunity of arranging themſelves into that form of cryſtals by which forged iron is diſtinguiſhed, and by which it poſſeſſes coheſion and all its properties.

There appears, therefore, to be no other eſſential difference between forged and caſt iron, except what ariſes from the cryſtallization. Caſt iron is indeed often not ſufficiently purified from other ſubſtances which are mixed with the calx. It appears alſo to contain a conſiderable quantity of calx unreduced; for during the proceſs for converting it into forged iron, by heat alone, a pale flame ariſes from the metal till near the end of the proceſs. This is owing to fixed air which the heat forces off from the calx. The expulſion of this air reduces the calx, and thereby frees the metal from that injurious mixture.

That this explanation of the annealing of iron is probable, appears alſo from the well-known fact of forged iron being incomparably more difficult of fuſion than caſt iron. A piece of forged iron requires a very violent heat to melt it; but when it is reduced to a ſmall powder, it melts in a much lower degree of heat. Iron diminiſhes in bulk when it paſſes into a fluid ſtate, while moſt other metals increaſe in volume. The expanſion which heat occaſions in bringing them to their melting point, will be favourable to their fluidity by gradually bringing the particles to the ſame ſtate of ſeparation in which they are when the maſs is fluid; but the expanſion of iron by heat removes it farther from that ſtate, and keeps it in the ſtate which is favourable to the continuance of it in a cryſtallized form. It will not melt till the heat expand it ſo much that the coheſion of cryſtallization be overcome. When it is reduced to a minute powder before it be expoſed to the heat, it melts ſooner. The cryſtals having been deſtroyed, that coheſion has no effect in preventing it from paſſing into a ſtate of fluidity.

Upon the ſame principles may be explained the almoſt peculiar property of welding poſſeſſed by iron, and the converſion of forged iron into ſteel.

But perhaps they may alſo be applied to platina, a metal which has lately gained much attention. It poſſeſſes ſome of the properties of iron. It is ſtill more difficult of fuſion than that metal. It is ſuſceptible of being welded. The natural grains of it can ſcarcely be melted in the focus of the moſt powerful burning glaſs; but when it is diſſolved in aqua regia, and precipitated by potaſh, it has been melted in ſmall globules by the blowpipe. When precipitated by muriate of ammoniac, it has been melted in a conſiderable maſs in the heat of a furnace; but it is ſaid to be hard and brittle. Annea. Annealing

Many attempts have been made to procure a maſs of it in a malleable ſtate, but without ſucceſs. It is ſaid that the proceſs is now diſcovered by a chemiſt in Spain. The treatment of the metal is probably very ſimple. Perhaps it only conſiſts in precipitating it in a minute powder from aqua-regia, expoſing it to a ſtrong heat which melts it, and keeping it for ſome time in a ſtate nearly fluid, that it may, like iron, cryſtallize regularly: by this it will poſſeſs all its metallic properties.

ANNECY, a city of Savoy, ſeated between Chamberry and Geneva, on the banks of a lake of the ſame name, from whence run ſeveral brooks, which flow through the town, and uniting at length, form a river. There are piazzas in moſt of the ſtreets of the town, which ſerve to ſhelter the inhabitants from rain. It has ſeveral collegiate and pariſh churches, as well as convents for men and women. The lake is about nine miles long and four broad. E. Long. 6. 12. N. Lat. 45. 53.

ANNESLEY, Arthur, earl of Angleſey, and lord privy ſeal in the reign of King Charles II. was the ſon of Sir Francis Anneſley, Baronet, Lord Mount-Norris, and Viſcount Valentia, in Ireland; and was born at Dublin on the 10th of July 1614. He was for ſome time at the univerſity of Oxford, and afterwards ſtudied the law at Lincoln's Inn. He had a conſiderable ſhare in the public tranſactions of the laſt century; for in the beginning of the civil war he ſat in the parliament held at Oxford; but afterwards became reconciled to the oppoſite party, and was ſent commiſſioner to Ulſter, to oppoſe the deſigns of the rebel Owen Roe O'Neal. He engaged in ſeveral other affairs with great ſucceſs. He was preſident of the council of ſtate after the death of Oliver, and was principally concerned in bringing about the Reſtoration; ſoon after which, King Charles II. raiſed him to the dignity of a baron, by the title of Lord Anneſley, of Newport-Pagnel, Bucks; and a ſhort time after he was made earl of Angleſey. During that reign he was employed in ſome very important affairs, was made treaſurer of the navy, and afterwards lord privy ſeal. In October 1680, his lordſhip was charged by one Dangerfield, in an information delivered upon oath, at the bar of the houſe of commons, with endeavouring to ſtifle evidence in relation to the Popiſh plot, and to promote the belief of a Preſbyterian one. The uneaſineſs he received from this attack did not prevent his ſpeaking his opinion freely of thoſe matters in the houſe of lords, particularly in regard to the Popiſh plot. About the ſame time he anſwered the Lord Caſtlehaven's Memoirs, in which that nobleman endeavoured to paint the Iriſh rebellion in the lighteſt colours; and a ſharp diſpute was raiſed, which ended in the ſeal's being taken from him. He was a perſon of great abilities, had uncommon learning, and was well acquainted with the conſtitution and laws of England. He wrote, beſides his Animadverſions on Caſtlehaven's

Annexation, Annihilation.

Memoirs, 1. The Privileges of the Houſe of Lords and Commons ſtated. 2. A Diſcourſe on the Houſe of Lords. 3. Memoirs. 4. The Hiſtory of the Troubles in Ireland, from the rebellion in 1641 till the Reſtoration. 5. Truth unveiled, in behalf of the Church of England;—and ſome other works. He died in April 1686, in the 73d year of his age; and was ſucceeded by his ſon James.

ANNEXATION, in *Law*, a term uſed to imply the uniting of lands or rents to the crown.

ANNIHILATION, the act of reducing any created being into nothing.

Chriſtians, Heathens, Jews, Siameſe, Perſians, divines, philoſophers, &c. have their peculiar ſyſtems, ſentiments, conjectures, not to ſay dreams, concerning annihilation; and we find great diſputes among them about the reality, the poſſibility, the means, meaſures, prevention, ends, &c. of annihilation.

The firſt notions of the production of a thing from, or reduction of it to, nothing, Dr Burnet ſhows, aroſe from the Chriſtian theology; the words *creation* and *annihilation*, in the ſenſe now given to them, having been equally unknown to the Hebrews, the Greeks, and the Latins.

The ancient philoſophers in effect denied all annihilation as well as creation, reſolving all the changes in the world into new modifications, without ſuppoſing the production of any thing new, or deſtruction of the old. By daily experience, they ſaw compounds diſſolved; and that in their diſſolution nothing periſhed but their union or connexion of parts: when in death the body and ſoul were ſeparated, the man they held was gone, but that the ſpirit remained in its original the great ſoul of the world, and the body in its earth from whence it came; theſe were again wrought by nature into new compoſitions, and entered new ſtates of being which had no relation to the former.

The Perſian bramins hold, that after a certain period of time, conſiſting of 71 joogs, God not only annihilates the whole univerſe, but every thing elſe, angels, ſouls, ſpirits, and all, by which he returns to the ſame ſtate he was in before the creation; but that, having breathed a while, he goes to work again, and a new creation ariſes, to ſubſiſt 71 joogs more, and then to be annihilated in its turn. Thus they hold there have been almoſt an infinite number of worlds: but how many joogs are elapſed ſince the laſt creation, they cannot certainly tell; only in an almanack written in the Shanſcrit language in 1670, the world is ſaid to be then 3,892,771 years old from the laſt creation.

The Siameſe heaven is exactly the hell of ſome Socinians and other Chriſtian writers; who, ſhocked with the horrible notion of eternal torments, have taken refuge in the ſyſtem of annihilation. This ſyſtem ſeems countenanced by Scripture; for that the words *death*, *deſtruction*, and *periſhing*, whereby the puniſhment of the wicked is moſt frequently expreſſed in Scripture, do moſt properly import annihilation and an utter end of being. To this Tillotſon anſwers, that theſe words, as well as thoſe correſponding to them in other languages, are often uſed, both in Scripture and other writings, to ſignify a ſtate of great miſery and ſuffering, without the utter extinction of the miſerable. Thus God is often ſaid in Scripture to bring *deſtruction* on a nation, when he ſends judgment upon them, but without exterminating or making an end of them. So, in other languages, it is frequent, by *periſhing*, to expreſs a perſon's being made miſerable; as in that known paſſage in Tiberius's letter to the Roman ſenate: *Ita me dii, deæque omnes, pejus perdant, quam hodie perire me ſentio.* As to the word *death*, a ſtate of miſery which is as bad, or worſe than death, may properly enough be called by that name; and thus the puniſhment of wicked men after the day of judgment is in the book of Revelation frequently called the *ſecond death*. Annihilation.

Some Chriſtian writers allow a long time of the moſt terrible torments of ſinners; and after that ſuppoſe that there ſhall be an utter end of their being. Of this opinion Irenæus appears to have been; who, according to M. du Pin, taught that the ſouls, at leaſt of the wicked, would not ſubſiſt eternally; but that, after having undergone their torments for a certain period, they would at laſt ceaſe to be at all. But Tillemont, Petit, Didier, and others, endeavour to defend Irenæus from this imputation, as being too favourable to the wicked.

It has been much diſputed among divines, whether, at the conſummation of all things, this *earth* is to be annihilated, or only purified, and fitted for the habitation of ſome new order of beings. Gerard in his Common Places, and Hakewil in his Apology, contend earneſtly for a total abolition or annihilation. Ray, Calmet, and others, think the ſyſtem of renovation or reſtitution more probable, and more conſonant to Scripture, reaſon, and antiquity. The fathers who have treated on the queſtion are divided; ſome holding that the univerſe ſhall not be annihilated, but only its external face changed; others aſſerting, that the ſubſtance of it ſhall be deſtroyed.

How widely have the ſentiments of mankind differed as to the poſſibility and impoſſibility of annihilation! According to ſome, nothing ſo difficult; it requires the infinite power of the Creator to effect it: ſome go further, and ſeem to put it out of the power of God himſelf. According to others, nothing ſo eaſy: Exiſtence is a ſtate of violence; all things are continually endeavouring to return to their primitive nothing; it requires no power at all; it will do itſelf; nay, what is more, it requires an infinite power to prevent it.

Many authors conſider preſervation as a continual reproduction of a thing, which, ſubſiſting no longer of itſelf, would every moment return into nothing. Gaſſendi on the contrary aſſerts, that the world may indeed be annihilated by the ſame power which firſt created it, but that to continue it there is no occaſion for any power of preſervation.

Some divines, of which number the learned Biſhop King ſeems to be, hold annihilation for the greateſt of all evils, worſe than even the utmoſt torments of hell flames; whilſt others, with ſome of the eaſtern philoſophers, acknowledge annihilation for the ultimate pitch of happineſs human nature is capable of; that ſovereign good, that abſolute beatitude, ſo long vainly ſought for by the philoſophers, is found here. No wonder it had been ſo long concealed; for who would have thought of looking for the *ſummum bonum*, where others have placed the ſum of miſery?

The ſaid prelate propoſes it as a queſtion, Whether ſuffering eternal torments be a greater evil than not exiſting? He thinks it highly probable, that the damned will

Anni ‖ Annobon.

will be such fools, that feeling their own misery in the most exquisite degree, they will rather applaud their own conduct, and choose to be, and to be what they are, rather than not to be at all; fond of their condition, however wretched, like people enraged, they will persist in their former sentiments without opening their eyes to their folly, and persevere by way of indignation and revenge. Mr Bayle refutes him on this head; but might, one would think, have saved himself the trouble.

The Talapoins hold it the supreme degree of happiness to have the soul totally annihilated, and freed from the burden and slavery of transmigrations. They speak of three Talapoins, who, after a great number of transmigrations, became gods; and when arrived at this state, procured this further reward of their merit, to be annihilated. The ultimate reward of the highest perfection man can arrive at is *neiurepan*, or annihilation; which at length is granted to those who are perfectly pure and good, after their souls have wandered many thousand years through various bodies.

ANNI NUBILES, in *Law*, denotes the marriageable age of a woman, viz. after she has arrived at twelve.

ANNIVERSARY, the annual return of any remarkable day. Anniversary days, in old-times, more particularly denoted those days in which an office was yearly performed for the souls of the deceased, or the martyrdom of the saints was yearly celebrated in the church.

ANNOBON, a small island of Africa, on the coast of Loango, belonging to the Portuguese. It lies in E. Long. 5. 10. S. Lat. 1. 50. and receives its name from being discovered on New year's day. According to Pyrard, it is about five or six French leagues in compass; but Baudrand says, it is ten leagues round. Here are two high mountains, the tops of which being continually covered with clouds, occasion frequent rains. On the south-east of the island are two rocks; one of which is low, and upon a level with the surface of the sea; the other higher and larger, but both dangerous in the night to shipping; but between them the channel is deep and clear. These rocks are inhabited by vast numbers of birds, so tame, that the sailors frequently catch them with their hands. On the same side of the island is a convenient watering place at the foot of a rivulet, which tumbles from the mountains down to a valley covered with orange and citron trees, &c. and affording a pleasant and refreshing shade; but the road on the north-west side is difficult and dangerous, though most frequented by ships who have no intention of touching upon the continent. In either place it is difficult to take in a sufficient quantity of water, on account of the violent breakings of the sea, and a stone intrenchment erected by the negroes, from which they annoy all strangers that attempt to land. The true road for shipping lies on the north-east side, where they may anchor in seven, ten, thirteen, or sixteen fathoms, on a fine sand close to the land, opposite to the village where the negroes have thrown up their intrenchments.

The climate is wholesome, and the air clear and serene for the greatest part of the year. Every part of the island is watered by pleasant brooks, and fresh water springs, which, however, at the new and full moons, or in all high tides, acquire a brackishness. The banks of every rivulet are covered with palms, whence the inhabitants extract their wine by incision. Here are a number of fertile valleys, which produce Turkey corn, rice, millet, yams, potatoes, &c. and afford pasture for abundance of oxen, sheep, goats, &c. Poultry and fish also abound here; but the only merchantable product is cotton, which is the most equal in quality to any produced in India, though the quantity is small.

Anno ‖ Annot.

In the year 1605, the Dutch admiral Matelief found 200 negroes, and two Portuguese, on Annobon, most of them able to bear arms, expert in the use of them, and trained up in military discipline. La Croix says, it has been opposite to the road that contains above 100 houses, the whole surrounded by a parapet. Most of their dwellings are cane huts. In the whole island there is not a single house built of stone, and only two of wood, which belong to the Portuguese. All the inhabitants are meanly clothed; the women go bareheaded, and have also the upper part of the body naked, modestly being defended by a piece of linen wrapt under their stomach, and falling down in the form of a petticoat, or wide apron, to the knees. As to the men, they wear only a linen girdle round the loins, with a small flap before. The women carry their children on their backs, and suckle them over the shoulder. All the inhabitants are subject to the Portuguese governor, who is the chief person in the island; at the same time that the negroes have their own chief subordinate to him. They are all rigid Catholics, having either been compelled or persuaded by the arguments of the Portuguese to embrace; and, like all other converts, they are bigotted in proportion to the novelty of the belief, and their ignorance of the true tenets.

ANNO DOMINI, i. e. the year of our Lord; the computation of time from our Saviour's incarnation.

ANNOMINATION, in *Rhetoric*, the same with what is otherwise called *paronomasia*. See PARONOMASIA.

ANNONA, in Roman antiquity, denotes provision for a year of all sorts, as of flesh, wine, &c. but especially of corn. Annona is likewise the allowance of oil, salt, bread, flesh, corn, wine, hay, and straw, which was annually provided by the contractors for the maintenance of an army.

ANNONA, the *Custard Apple*. See BOTANY *Index*.

ANNONÆ PRÆFECTUS, in antiquity, an extraordinary magistrate, whose business it was to prevent a scarcity of provision, and to regulate the weight and fineness of bread.

ANNONAY, a small town of France, in the department of Ardeche, formerly Upper Vivarais, seated on the river Deunre. E. Long. 4. 52. N. Lat. 45. 15.

ANNOT, a small city on the mountains of Provence in France. E. Long. 7. 0. N. Lat. 44. 4.

ANNOTATION, in matters of literature, a brief commentary, or remark, upon a book or writing, in order to clear up some passage, or draw some conclusion from it.

ANNOTTA. See ANOTTA.

ANNUAL, in a general sense, an appellation given to whatever returns every year, or is always performed within that space of time.

Annual Motion of the Earth. See ASTRONOMY.

Annual Leaves, are such leaves as come up fresh in the spring, and perish in winter. These stand opposed to *Evergreens*.

Annual || Annuity.

Annual Plants, called alſo ſimply *annuals*, are ſuch as only live their year, i. e. come up in the ſpring and die again in the autumn; and accordingly are to be recruited every year.

ANNUALRENT is uſed, in *Scots Law*, to denote a yearly profit due by a debtor in a ſum of money to a creditor for the uſe of it.

Right of Annualrent, in *Scots Law*, the original method of burdening lands with a yearly payment for the loan of money, before the taking of intereſt for money was allowed by ſtatute.

ANNUEL of Norway, of which mention is made in the acts of parliament of King James III. was an annual payment of a hundred merks ſterling, which the kings of Scotland were obliged to pay to the kings of Norway, in ſatisfaction for ſome pretenſions which the latter had to the Scottiſh kingdom, by virtue of a conveyance made thereof by Malcolm Kenmore, who uſurped the crown after his brother's deceaſe. This annuel was firſt eſtabliſhed in 1266: in conſideration whereof the Norwegians renounced all title to the ſucceſſion to the iſles of Scotland. It was paid till the year 1468, when the annuel, with all its arrears, was renounced in the contract of marriage between King James III. and Margaret daughter of Chriſtian I. king of Norway, Denmark, and Sweden.

ANNUITY, a ſum of money, payable yearly, half-yearly, or quarterly, to continue a certain number of years, for ever, or for life.

An annuity is ſaid to be in arrear, when it continues unpaid after it falls due. And an annuity is ſaid to be in reverſion, when the purchaſer, upon paying the price, does not immediately enter upon poſſeſſion; the annuity not commencing till ſome time after.

Intereſt on annuities may be computed either in the way of ſimple or compound intereſt. But compound intereſt being found moſt equitable, both for buyer and ſeller, the computation by ſimple intereſt is univerſally diſuſed.

I. *Annuities for a certain time.*

Problem 1. Annuity, rate, and time, given; to find the amount, or ſum of yearly payments, and intereſt.

Rule. Make 1 the firſt term of a geometrical ſeries, and the amount of 1l. for a year the common ratio; continue this ſeries to as many terms as there are years in the queſtion, and the ſum of this ſeries is the amount of 1l. annuity for the given years; which, multiplied by the given annuity, will produce the amount ſought.

Example. An annuity of 40l. payable yearly, is forborn and unpaid till the end of 5 years: What will then be due, reckoning compound intereſt at 5 per cent. on all the payments then in arrear?

1 5 5 4 5
1 : 1.05 : 1.1025 : 1.157625 : 1.21550625? whoſe ſum is 5.52563125l.; and 5.52563125 × 40 = 221.02525 = 221l. 0s. 6d. the amount ſought.

The amount may alſo be found thus: Multiply the given annuity by the amount of 1l. for a year; to the product add the given annuity, and the ſum is the amount in two years; which multiply by the amount of 1l. for a year; to the product add the given annuity, and the ſum is the amount in 3 years, &c. The former queſtion wrought in this manner follows: Annuity.

40 am. in 1 year.	126.1 am. in 3 years.
1.05	1.05
42.00	132.405
40	40
82 am. in 2 years.	172 405 am. in 4 years.
1.05	1.05
86.10	181.02525
40	40
126.1 am. in 3 years.	221.02525 am. in 5 years.

If the given time be years and quarters, find the amount for the whole years, as above: then find the amount of 1l. for the given quarters; by which multiply the amount for the whole years; and to the product add ſuch a part of the annuity as the given quarters are of a year.

If the given annuity be payable half yearly, or quarterly, find the amount of 1l. for half a year or a quarter; by which find the amount for the ſeveral half-years or quarters, in the ſame manner as the amount for the ſeveral years is found above.

Prob. 2. Annuity, rate, and time given; to find the preſent worth, or ſum of money that will purchaſe the annuity.

Rule. Find the amount of the given annuity by the former problem; and then, by compound intereſt, find the preſent worth of this amount, as a ſum due at the end of the given time.

Examp. What is the preſent worth of an annuity of 40l. to continue 5 years, diſcounting at 5 per cent. compound intereſt?

By the former problem, the amount of the given annuity for 5 years, at 5 per cent. is 221.02525; and by compound intereſt, the amount of 1l. for 5 years, at 5 per cent. is 1.276281562 5.

And, 1.276281562 5)221.02525000(173.179 = 173l. 3s. 7d. the preſent worth ſought.

The preſent worth may be alſo found thus: By compound intereſt, find the preſent worth of each year by itſelf, and the ſum of theſe is the preſent worth ſought. The former example done in this way follows:

1.276281562 5)40.0000000000	(31.3410
1.21550625)40.0000000	(32.9080
1.157625)40.00000	(34.5535
1.1025)40.000	(36.2811
1.05)40.0	(38.0952
Preſent worth	173.1788

If the annuity to be purchaſed be in reverſion, find firſt the preſent worth of the annuity, as commencing immediately, by any of the methods taught above; and then, by compound intereſt, find the preſent worth of that preſent worth, rebating for the time in reverſion; and this laſt preſent worth is the anſwer.

Examp.

Annuity. EXAMP. What is the preſent worth of a yearly penſion or rent of 75l. to continue 4 years, but not to commence till three years hence, diſcounting at 5 per cent.?

.05 : 1 : : 75 : 1500
1.05 × 1.05 × 1.05 × 1.05 = 1.21550625
1.21550625)1500.00000(1234.05371
1500
1234.05371

265.94629, preſent worth of the annuity, if it was to commence immediately.

1.05 × 1.05 × 1.05 = 1.157625 L. s. d.
1.157625)265.94629(229.7344 = 229 1 8¾

PROB. 3. Preſent worth, rate, and time given; to find the annuity.

RULE. By the preceding problem, find the preſent worth of 1l. annuity for the rate and time given; and then ſay, As the preſent worth thus found to 1l. annuity, ſo the preſent worth given to its annuity; that is, divide the given preſent worth by that of 1l. annuity.

EXAMP. What annuity, to continue 5 years, will 173l. 3s. 7d. purchaſe, allowing compound intereſt at 5 per cent.?

.05 : 1 : : 1 : 20l.
1.05 × 1.05 × 1.05 × 1.05 × 1.05 = 1.2762815625
1.2762815625)20.00000000(15.6705
20
15.6705

4.3295 preſent worth of 1l. annuity.
4.329)173.179(40l. annuity. *Anſ.*

II. *Annuities for ever*, or *freehold Eſtates*.

In freehold eſtates, commonly called *annuities in fee-ſimple*, the things chiefly to be conſidered are, 1. The annuity or yearly rent. 2. The price or preſent worth. 3. The rate of intereſt. The queſtions that uſually occur on this head will fall under one or other of the following problems.

PROB. 1. Annuity and rate of intereſt given, to find the price.

As the rate of 1l. to 1l. ſo the rent to the price.

EXAMP. The yearly rent of a ſmall eſtate is 40l: What is it worth in ready money, computing intereſt at 3½ per cent.?

As .035 : 1 : : 40 : 1142.857142 = *L.*1142 17 1¼.

PROB. 2. Price and rate of intereſt given, to find the rent or annuity.

As 1l. to its rate, ſo the price to the rent.

EXAMP. A gentleman purchaſes an eſtate for 4000l. and has 4½ per cent. for his money: Required the rent.?

As 1 : .045 : : 4000 : 1 : 180l. rent ſought.

PROB. 3. Price and rent given, to find the rate of intereſt.

As the price to the rent, ſo 1 to the rate.

EXAMP. An eſtate of 180l. yearly rent is bought ſo 4000l.: What rate of intereſt has the purchaſer for his money?

As 4000 : 180l. : : 1 : .045 rate ſought. Annuity

PROB. 4. The rate of intereſt given, to find how many years purchaſe an eſtate is worth.

Divide 1 by the rate, and the quot is the number of years purchaſe the eſtate is worth.

EXAMP. A gentleman is willing to purchaſe an eſtate, provided he can have 2½ per cent. for his money: How many years purchaſe may he offer?

.025)1.000(40 years purchaſe. *Anſ.*

PROB. 5. The number of years purchaſe, at which an eſtate is bought or ſold, given; to find the rate of intereſt.

Divide 1 by the number of years purchaſe, and the quot is the rate of intereſt.

EXAMP. A gentleman gives 40 years purchaſe for an eſtate: What intereſt has he for his money?

40)1.000(.025 rate ſought.

The computations hitherto are all performed by a ſingle diviſion or multiplication, and it will ſcarcely be perceived that the operations are conducted by the rules of compound intereſt; but when a reverſion occurs, recourſe muſt be had to tables of annuities on compound intereſt.

PROB. 6. The rate of intereſt, and the rent of a freehold eſtate in reverſion, given; to find the preſent worth or value of the reverſion.

By Prob. 1. find the price or preſent worth of the eſtate, as if poſſeſſion was to commence preſently; and then, by the Tables, find the preſent value of the given annuity, or rent, for the years prior to the commencement; ſubtract this value from the former value, and the remainder is the value of the reverſion.

EXAMP. A has the poſſeſſion of an eſtate of 130l. per annum, to continue 20 years; B has the reverſion of the ſame eſtate from that time for ever: What is the value of the eſtate, what the value of the 20 years poſſeſſion, and what the value of the reverſion, reckoning compound intereſt at 6 per cent.?

By Prob. 1. .06)130.00)2166.6666 value of the eſtate.
By Tables 1491.0896 val. of the poſſeſſion.

675.5770 val. of the reverſion.

PROB. 7. The price or value of a reverſion, the time prior to the commencement, and rate of intereſt, given, to find the annuity or rent.

By the Tables, find the amount of the price of the reverſion for the years prior to the commencement; and then by Prob. 3. find the annuity which that amount will purchaſe.

EXAMP. The reverſion of a freehold eſtate, to commence 20 years hence, is bought for 675.577l. compound intereſt being allowed at 6 per cent.: Required the annuity or rent?

By the Tables the amount of 675.577l. for 20 years, at 6 per cent. is } *L.* 2166.6
By Prob. 2. 2166.6 × .06 = 130.0 rent ſought.

III. *Life Annuities*.

THE value of annuities for life is determined from obſervations made on the bills of mortality. Dr Halley,

Mr

Annuity. Mr Simpſon, and Monſ. de Moivre, are gentlemen of diſtinguiſhed merit in calculations of this kind.

Dr Halley had recourſe to the bills of mortality at Breſlaw, the capital of Sileſia, as a proper ſtandard for the other parts of Europe, being a place pretty central, at a diſtance from the ſea, and not much crowded with travellers or foreigners. He pitches upon 1000 perſons all born in one year, and obſerves how many of theſe were alive every year, from their birth to the extinction of the laſt, and conſequently how many died each year, as in the firſt of the following Tables; which is well adapted to Europe in general. But in the city of London there is obſerved to be a greater diſparity in the births and burials than in any other place, owing probably to the vaſt reſort of people thither, in the way of commerce, from all parts of the known world. Mr Simpſon, therefore, in order to have a table particularly ſuited to this populous city, pitches upon 1280 perſons all born in the ſame year, and records the number remaining alive each year till none were in life.

It may not be improper, however, to obſerve, that however perfect tables of this ſort may be in themſelves, and however well adapted to any particular climate, yet the concluſions deduced from them muſt always be uncertain, being nothing more than probabilities, or conjectures drawn from the uſual period of human life. And the practice of buying and ſelling annuities on lives, by rules founded on ſuch principles, may be juſtly conſidered as a ſort of lottery or chance work, in which the parties concerned muſt often be deceived. But as eſtimates and computations of this kind are now become faſhionable, we ſhall ſubjoin ſome brief account of ſuch as appear moſt material.

Mr Halley's Table on the Bills of Mortality at Breſlaw.

Age.	*Perſ. liv.*	*Age.*	*Perſ. liv.*	*Age.*	*Perſ. liv.*	*Age.*	*Perſ. liv.*
1	1000	24	573	47	377	70	142
2	855	25	567	48	367	71	131
3	798	26	560	49	357	72	120
4	760	27	553	50	346	73	109
5	732	28	546	51	335	74	98
6	710	29	539	52	324	75	88
7	692	30	531	53	313	76	78
8	680	31	523	54	302	77	68
9	670	32	515	55	292	78	58
10	661	33	507	56	282	79	49
11	653	34	499	57	272	80	41
12	646	35	490	58	262	81	34
13	640	36	481	59	252	82	28
14	634	37	472	60	242	83	23
15	628	38	463	61	232	84	20
16	622	39	454	62	222	85	15
17	616	40	445	63	212	86	11
18	610	41	436	64	202	87	8
19	604	42	427	65	192	88	5
20	598	43	417	66	182	89	3
21	592	44	407	67	172	90	1
22	586	45	397	68	162	91	0
23	579	46	387	69	152		

Annuity.

Mr Simpſon's Table on the Bills of Mortality at London.

Age.	*Perſ. liv.*	*Age.*	*Perſ. liv.*	*Age.*	*Perſ. liv.*	*Age.*	*Perſ. liv.*
0	1280	24	434	48	220	72	59
1	870	25	426	49	212	73	54
2	760	26	418	50	204	74	49
3	685	27	410	51	196	75	45
4	630	28	402	52	188	76	41
5	585	29	394	53	180	77	38
6	564	30	385	54	172	78	35
7	551	31	376	55	165	79	32
8	541	32	367	56	158	80	29
9	532	33	358	57	151	81	26
10	524	34	349	58	144	82	23
11	517	35	340	59	137	83	20
12	510	36	331	60	130	84	17
13	504	37	322	61	123	85	14
14	498	38	313	62	117	86	12
15	492	39	304	63	111	87	10
16	486	40	294	64	105	88	8
17	480	41	284	65	99	89	6
18	474	42	274	66	93	90	5
19	468	43	264	67	87	91	4
20	462	44	255	68	81	92	3
21	455	45	246	69	75	93	2
22	448	46	237	70	69	94	1
23	441	47	228	71	64	95	0

From the preceding Tables the probability of the continuance or extinction of human life is eſtimated as follows.

1. The probability that a perſon of a given age ſhall live a certain number of years, is meaſured by the proportion which the number of perſons living at the propoſed age has to the difference between the ſaid number and the number of perſons living at the given age.

Thus, if it be demanded, what chance a perſon of 40 years has to live ſeven years longer? from 445, the number of perſons living at 40 years of age in Dr Halley's table, ſubtract 377, the number of perſons living at 47 years of age, and the remainder 68 is the number of perſons that died during theſe ſeven years; and the probability or chance that the perſon in the queſtion ſhall live theſe 7 years is as 377 to 68, or nearly as 5½ to 1. But, by Mr Simpſon's table, the chance is ſomething leſs than that of 4 to 1.

2. If the year to which a perſon of a given age has an equal chance of arriving before he dies, be required, it may be found thus: Find half the number of perſons living at the given age in the tables, and in the column of age you have the year required.

Thus, if the queſtion be put with reſpect to a perſon of 30 years of age, the number of that age in Dr Halley's table is 531, the half whereof is 265, which is found in the table between 57 and 58 years; ſo that a perſon of 30 years has an equal chance of living between 27 and 28 years longer.

3. By the tables, the premium of inſurance upon lives may in ſome meaſure be regulated.

Thus,

Annuity. Thus, the chance that a perſon of 25 years has to live another year, is, by Dr Halley's table, as 82 to 1; but the chance that a perſon of 50 years has to live a year longer is only 30 to 1; and, conſequently, the premium for inſuring the former ought to be to the premium for inſuring the latter for one year, as 30 to 80, or as 3 to 8.

Prob. I. To find the value of an annuity of 1l. for the life of a ſingle perſon of any given age.

Monſ. de Moivre, by obſerving the decreaſe of the probabilities of life, as exhibited in the table, compoſed an algebraic theorem or canon, for computing the value of any annuity for life; which canon we here lay down by way of

Rule. Find the complement of life; and, by the tables, find the value of 1l. annuity for the years denoted by the ſaid complement; multiply this value by the amount of 1l. for a year, and divide the product by the complement of life; then ſubtract the quot from 1; divide the remainder by the intereſt of 1l. for a year; and this laſt quot will be the value of the annuity ſought, or, in other words, the number of years purchaſe the annuity is worth.

Examp. What is the value of an annuity of 1l. for an age of 50 years, intereſt at 5 per cent.?

86
50 age given.

36 complement of life.

By the tables, the value is, 16.5468
Amount of 1l. for a year, 1.05

827340
165468

Complement of life, 36)17.374140(.482615
From unity, viz. 1.000000
Subtract .482615

Intereſt of 1l. .05).517385(10.3477 value ſought.

By the preceding problem is conſtructed the following Table.

The value of 1l. annuity for a ſingle life.

Age.	3 per c.	3½ per c.	4 per c.	4½ per c.	5 per c.	6 per c.
9=10	19.87	18.27	16.88	15.67	14.60	12.80
8=11	19.74	18.16	16.79	15.59	14.53	12.75
7=12	19.60	18.05	16.64	15.51	14.47	12.70
13	19.47	17.94	16.60	15.43	14.41	12.65
6=14	19.33	17.82	16.50	15.35	14.34	12.60
15	19.19	17.71	16.41	15.27	14.27	12.55
16	19.05	17.59	16.31	15.19	14.20	12.50
5=17	18.90	17.46	16.21	15.10	14.12	12.45
18	18.76	17.33	16.10	15.01	14.05	12.40
19	18.61	17.21	15.99	14.92	13.97	12.35
4=20	18.46	17.09	15.89	14.83	13.89	12.30
21	18.30	16.96	15.78	14.73	13.81	12.20
22	18.15	16.83	15.67	14.64	13.72	12.15
23	17.99	16.69	15.55	14.54	13.64	12.10
3=24	17.83	16.56	15.43	14.44	13.55	12.00
25	17.66	15.42	15.31	14.34	13.46	11.95

Annuity.

The value of 1l. annuity for a ſingle life.

Age.	3 per c.	3½ per c.	4 per c.	4½ per c.	5 per c.	6 per c.
26	17.50	16.25	15.19	14.23	13.37	11.90
27	17.33	16.13	15.04	14.12	13.28	11.80
28	17.16	15.98	14.94	14.02	13.18	11.75
29	16.98	15.83	14.81	13.91	13.09	11.65
3	16.80	15.68	14.68	13.80	12.99	11.60
2=31	16.62	15.53	14.54	13.67	12.88	11.50
32	16.44	15.37	14.41	13.55	12.78	11.40
33	16.25	15.21	14.27	13.43	12.67	11.35
34	16.06	15.05	14.12	13.30	12.56	11.25
35	15.86	14.89	13.98	13.17	12.45	11.15
36	15.67	14.71	13.82	13.04	12.33	11.05
37	15.46	14.52	13.67	12.90	12.21	11.00
38	15.29	14.34	13.52	12.77	12.09	10.90
1=39	15.05	14.16	13.36	12.63	11.90	10.80
40	14.84	13.98	13.20	12.48	11.83	10.70
41	14.63	13.79	13.02	12.33	11.70	10.55
42	14.41	13.59	12.85	12.18	11.57	10.45
43	14.19	13.40	12.68	12.02	11.43	10.35
44	13.96	13.20	12.50	11.87	11.29	10.25
45	13.73	12.99	12.32	11.70	11.14	10.10
46	13.49	12.78	12.13	11.54	10.99	10.00
47	13.25	12.56	11.94	11.37	10.84	9.85
48	13.01	12.36	11.74	11.19	10.68	9.75
49	12.76	12.14	11.54	11.02	10.51	9.60
50	12.51	11.92	11.34	10.82	10.35	9.45
51	12.26	11.69	11.13	10.64	10.17	9.30
52	12.00	11.45	10.92	10.44	9.99	9.20
53	11.73	11.20	10.70	10.24	9.82	9.00
54	11.46	10.95	10.47	10.04	9.63	8.85
55	11.18	10.69	10.24	9.82	9.44	8.70
56	10.90	10.44	10.01	9.61	9.24	8.55
57	10.61	10.18	9.77	9.39	9.04	8.35
58	10.32	9.91	9.52	9.16	8.83	8.20
59	10.03	9.64	9.27	8.93	8.61	8.00
60	9.73	9.36	9.01	8.69	8.38	7.80
61	9.42	9.08	8.75	8.44	8.16	7.60
62	9.11	8.79	8.48	8.19	7.93	7.40
63	8.79	8.49	8.20	7.94	7.68	7.20
64	8.46	8.19	7.92	7.67	7.43	6.95
65	8.13	7.88	7.63	7.39	7.18	6.75
66	7.79	7.56	7.33	7.12	6.91	6.50
67	7.45	7.24	7.02	6.83	6.64	6.25
68	7.10	6.91	6.75	6.54	6.36	6.00
69	6.75	6.57	6.39	6.23	6.07	5.75
70	6.38	6.22	6.06	5.92	5.77	5.50
71	6.01	5.87	5.72	5.59	5.47	5.20
72	5.63	5.51	5.38	5.26	5.15	4.90
73	5.25	5.14	5.02	4.92	4.82	4.60
74	4.85	4.77	4.66	4.57	4.49	4.30
75	4.45	4.38	4.29	4.22	4.14	4.00

Of

Annuity.

The value of 1l. annuity for a ſingle life.

Age.	3 *per c.*	3½ *per c*	4 *per c.*	4½ *per c.*	5 *per c.*	6 *per c.*
76	4.05	3.98	3.91	3.84	3.78	3.65
77	3.63	3.57	3.52	3.47	3.41	3.30
78	3.21	3.16	3.11	3.07	3.03	2.95
79	2.78	2.74	2.74	2.67	2.64	2.55
80	2.34	2.31	2.31	2.26	2.23	2.15

The above table ſhows the value of an annuity of one pound for a ſingle life, at all the current rates of intereſt; and is eſteemed the beſt table of this kind extant, and preferable to any other of a different conſtruction. But yet thoſe who ſell annuities have generally one and a half or two years more value, than ſpecified in the table, from purchaſers whoſe age is 20 years or upwards.

Annuities of this ſort are commonly bought or ſold at ſo many years purchaſe: and the value aſſigned in the table may be ſo reckoned. Thus the value of an annuity of one pound for an age of 50 years, at 3 per cent. intereſt, is 12.51; that is, 12l. 10s. or twelve and a half years purchaſe. The marginal figures on the left of the column of age ſerve to ſhorten the table, and ſignify, that the value of an annuity for the age denoted by them is the ſame with the value of an annuity for the age denoted by the numbers before which they ſtand. Thus the value of an annuity for the age of 9 and 10 years is the ſame; and the value of an annuity for the age of 6 and 14, for the age of 3 and 24, &c. is the ſame. The further uſe of the table will appear in the queſtions and problems following.

Quest. 1. A perſon of 50 years would purchaſe an annuity for life of 200l.: What ready money ought he to pay, reckoning intereſt at 4½ per cent.?

L.

By the table the value of 1l. is 10.8
Multiply by 200

Value to be paid in ready money, 2164.00 *Anſ.*

Quest. 2. A young merchant marries a widow lady of 40 years of age, with a jointure of 300l. a-year, and wants to diſpoſe of the jointure for ready money: What ſum ought he to receive, reckoning intereſt at 3½ per cent.?

L.

By the table, the value of 1l. is 13 98
300

Value to be received in ready money, 4194.00 *Anſ.*

Prob. 2. To find the value of any annuity for the joint continuance of two lives; one life failing, the annuity to ceaſe.

Here there are two caſes, according as the ages of the two perſons are equal or unequal.

1. If the two perſons be of the ſame age, work by the following

Rule. Take the value of any one of the lives from the table; multiply this value by the intereſt of 1l. for a year; ſubtract the product from 2; divide the foreſaid value by the remainder; and the quot will be the value of 1l. annuity, or the number of years purchaſe ſought. Annuity.

Examp. What is the value of 100l. annuity for the joint lives of two perſons, of the age of 30 years each, reckoning intereſt at 4 per cent.?

By the table, one life of years is -	14.68
Multiply by -	.04
Subtract the product -	5872
From - -	2.0000
Remains -	1.4128

And 1.4128)14.68(10.39 value of 1l. annuity.
And 10.39 × 100 = 1039 the value ſought.

2. If the two perſons are of different ages, work as directed in the following

Rule. Take the values of the two lives from the table; multiply them into one another, calling the reſult the firſt product; then multiply the ſaid firſt product by the intereſt of 1l. for a year, calling the reſult the ſecond product; add the values of the two lives, and from their ſum ſubtract the ſecond product; divide the firſt product by the remainder, and the quot will be the value of 1l. annuity, or the number of years purchaſe ſought.

Examp. What is the value of 70l. annuity for the joint lives of two perſons, whereof one is 40 and the other 50 years of age, reckoning intereſt at 5 per cent.?

By the table, the value of 40 years is -	11.83
And the value of 50 years is -	10.35
Firſt product,	122.4405
Multiply by	.05
Second product,	6.122025
Sum of the two lives, - -	22.180000
Second product deduct, - -	6.122025
Remainder, -	16.057975

And 16.057975)122.4405(7.62 value of 1l. annuity.
70

533.40 value ſought.

Prob. 3. To find the value of an annuity upon the longeſt of two lives; that is, to continue ſo long as either of the perſons is in life.

Rule. From the ſum of the values of the ſingle lives ſubtract the value of the joint lives, and the remainder will be the value ſought.

Examp. What is the value of an annuity of 1l. upon the longeſt of two lives, the one perſon being 30, and the other 40 years of age, intereſt at 4 per cent.?

By the table, 30 years is - -	14.68
40 years is - -	13.20
	27.88
Value of their joint lives, by Prob. 2. Caſe 2. is	9.62
Value ſought, - -	18.26

If

Annuity. If the annuity be any other than 1l. multiply the anſwer found as above by the given annuity.

If the two perſons be of equal age, find the value of their joint lives by Caſe 1. of Prob. 2.

Prob. 4. To find the value of the next preſentation to a living.

Rule. From the value of the ſucceſſor's life ſubtract the joint value of his and the incumbent's life, and the remainder will be the value of 1l. annuity; which multiplied by the yearly income, will give the ſum to be paid for the next preſentation.

Examp. A enjoys a living of 100l. per annum, and B would purchaſe the ſaid living for his life after A's death: The queſtion is, What he ought to pay for it, reckoning intereſt at 5 per cent. A being 60, and B 25 years of age?

		L.
By the table, B's life is	-	13.46
Joint value of both lives, by Prob. 2. is		6.97
The value of 1l. annuity,	-	6.49
Multiply by	-	100
Value of next preſentation,	-	649.00

The value of a direct preſentation is the ſame as that of any other annuity for life, and is found for 1l. by the table; which being multiplied by the yearly income, gives the value ſought.

Prob. 5. To find the value of a reverſion for ever, after two ſucceſſive lives; or to find the value of a living after the death of the preſent incumbent and his ſucceſſor.

Rule. By Prob. 3. find the value of the longeſt of the two lives, and ſubtract that value from the value of the perpetuity, and the remainder will be the value ſought.

Examp. A, aged 50, enjoys an eſtate or living of 100l. per annum; B, aged 30, is entitled to his lifetime of the ſame eſtate after A's death; and it is propoſed to ſell the eſtate juſt now, with the burden of A and B's lives on it: What is the reverſion worth, reckoning intereſt at 4 per cent.?

		L.
By the table, A's life of 50 is	-	11.34
B's life of 30 is	-	14.68
Sum,		26.02
Value of their joint lives, found by Prob. 2. Caſe 2. is	-	8.60
Value of the longeſt life,	-	17.42 ſub.
From the value of the perpetuity,		25.00
Remains the value of 1l. reverſion,		7.58
Multiply by		100
Value of the reverſion,	- -	758.00

Prob. 6. To find the value of the joint continuance of three lives, one life failing, the annuity to ceaſe.

Rule. Find the ſingle values of the three lives from the table; multiply theſe ſingle values continually, calling the reſult the product of the three lives; multiply that product by the intereſt of 1l. and that product again by 2, calling the reſult the double product; then, from the ſum of the ſeveral products of the lives, taken two and two, ſubtract the double product; divide the product of the three lives by the remainder, and the quot will be the value of the three joint lives. Annuity.

Examp. A is 18 years of age, B 34, and C 56; What is the value of their joint lives, reckoning intereſt at 4 per cent.?

By the table, the value of A's life is 16.1, of B's 14.12, and of C's 10.01.

16.1 × 14.12 × 10.01 = 2275.6, product of the three lives.

.04

91.024

2

182.048, double product.

Product of A and B,	16.1 × 14.12 × 2 = 455
A and C,	16.1 × 10.01 = 161.16
B and C,	14.12 × 10.00 = 141.32
Sum of all, two and two,	- 529.83
Double product ſubtract,	- 182.048
Remainder,	- 347.782

And 347.782)2275.600(6.54 value ſought.

Prob. 7. To find the value of an annuity upon the longeſt of three lives.

Rule. From the ſum of the values of the three ſingle lives taken from the table, ſubtract the ſum of all the joint lives, taken two and two as found by Prob. 2. and to the remainder add the value of the three joint lives, as found by Prob. 6. and that ſum will be the value of the longeſt life ſought.

Examp. A is 18 years of age, B 34, and C 56: What is the value of the longeſt of theſe three lives, intereſt at 4 per cent.?

By the table, the ſingle value of A's life is	16.1
ſingle value of B's life is	14.12
ſingle value of C's life is	10.01
Sum of the ſingle values,	40.23
By Prob. 2. the joint value of A and B is	10.76
joint value of A and C is	8.19
joint value of B and C is	7.65
Sum of the joint lives,	26.60
Remainder, -	13.63
By Prob. 6. the value of the 3 joint lives is	6.54
Value of the longeſt of the 3 lives. -	20.17

Other problems might be added, but theſe adduced are ſufficient for moſt purpoſes. The reader probably may wiſh that the reaſon of the rules, which, it muſt be owned, are intricate, had been aſſigned: but this could not be done without entering deeper into the ſubject than was practicable in this place. See Chances.

Annuities. *Annuities, Borrowing upon;* one of the methods employed by government for raiſing ſupplies.

Of this there are two methods; that of borrowing upon annuities for terms of years, and that of borrowing upon annuities for lives.

During the reigns of King William and Queen Anne, large ſums were frequently borrowed upon annuities for terms of years, which were ſometimes longer and ſometimes ſhorter. In 1693, an act was paſſed for borrowing one million upon an annuity of 14 per cent. or of 140,000l. a-year for 16 years. In 1691, an act was paſſed for borrowing a million upon annuities for lives, upon terms which in the preſent times would appear very advantageous. But the ſubſcription was not filled up. In the following year the deficiency was made good by borrowing upon annuities for lives at 14 per cent. or at a little more than ſeven years purchaſe. In 1695, the perſons who had purchaſed thoſe annuities were allowed to exchange them for others of 96 years, upon paying into the exchequer 63 pounds in the hundred; that is, the difference between 14 per cent. for life, and 14 per cent. for 96 years, was ſold for 63 pounds, or for four and a half years purchaſe. Such was the ſuppoſed inſtability of government, that even theſe terms procured few purchaſers. In the reign of Queen Anne, money was upon different occaſions borrowed both upon annuities for lives and upon annuities for terms of 32, of 89, of 98, and of 99 years. In 1719, the proprietors of the annuities for 32 years were induced to accept in lieu of them South Sea ſtock to the amount of eleven and a half years purchaſe of the annuities, together with an additional quantity of ſtock equal to the arrears which happened then to be due upon them. In 1720, the greater part of the other annuities for terms of years both long and ſhort were ſubſcribed into the ſame fund. The long annuities at that time amounted to 666,821l. 8s. 3½d. a-year. On the 5th of January 1775, the remainder of them, or what was not ſubſcribed at that time, amounted only to 136,453l. 12s. 8d.

During the two wars which began in 1739, and in 1755, little money was borrowed either upon annuities for terms of years, or upon thoſe for lives. An annuity for 98 or 99 years, however, is worth nearly as much money as a perpetuity, and ſhould, therefore, one might think, be a fund for borrowing nearly as much. But thoſe who, in order to make family ſettlements, and to provide for remote futurity, buy into the public ſtocks, would not care to purchaſe into one of which the value was continually diminiſhing; and ſuch people make a very conſiderable proportion both of the proprietors and purchaſers of ſtock. An annuity for a long term of years, therefore, though its intrinſic value may be very nearly the ſame with that of a perpetual annuity, will not find nearly the ſame number of purchaſers. The ſubſcribers to a new loan, who mean generally to ſell their ſubſcription as ſoon as poſſible, prefer greatly a perpetual annuity redeemable by parliament, to an irredeemable annuity for a long term of years of only equal amount. The value of the former may be ſuppoſed always the ſame, or very nearly the ſame; and it makes, therefore, a more convenient tranſferable ſtock than the latter.

During the two laſt mentioned wars, annuities, either for terms of years or for lives, were ſeldom granted but as premiums to the ſubſcribers to a new loan, over and above the redeemable annuity to intereſt upon the credit of which the loan was ſuppoſed to be made. They were granted, not as the proper fund upon which the money was borrowed; but as an additional encouragement to the lender. Annuities.

Annuities for lives have occaſionally been granted in two different ways; either upon ſeparate lives, or upon lots of lives, which in French are called *Tontines*, from the name of their inventor. When annuities are granted upon ſeparate lives, the death of every individual annuitant diſburdens the public revenue ſo far as it was affected by his annuity. When annuities are granted upon tontines, the liberation of the public revenue does not commence till the death of all the annuitants comprehended in one lot, which may ſometimes conſiſt of twenty or thirty perſons, of whom the ſurvivors ſucceed to the annuities of all thoſe who die before them; the laſt ſurvivor ſucceeding to the annuities of the whole lot. Upon the ſame revenue more money can always be raiſed by tontines than by annuities for ſeparate lives. An annuity, with a right of ſurvivorſhip, is really worth more than an equal annuity for a ſeparate life, and from the confidence which every man naturally has in his own good fortune, the principle upon which is founded the ſucceſs of all lotteries, ſuch an annuity generally ſells for ſomething more than it is worth. In countries where it is uſual for government to raiſe money by granting annuities, tontines are upon this account generally preferred to annuities for ſeparate lives. The expedient which will raiſe moſt money, is almoſt always preferred to that which is likely to bring about in the ſpeedieſt manner the liberation of the public revenue.

In France a much greater proportion of the public debts conſiſts in annuities for lives than in England. According to a memoir preſented by the parliament of Bourdeaux to the king in 1764, the whole public debt of France is eſtimated at twenty-four hundred millions of livres; of which the capital, for which annuities for lives had been granted, is ſuppoſed to amount to three hundred millions, the eighth part of the whole public debt. The annuities themſelves are computed to amount to thirty millions a-year, the fourth part of one hundred and twenty millions, the ſuppoſed intereſt of that whole debt. It is not the different degrees of anxiety in the two governments of France and England for the liberation of the public revenue, which occaſions this difference in their reſpective mode of borrowing; it ariſes altogether from the different views and intereſts of the lenders.

In Britain, the ſeat of government being in the greateſt mercantile city in the world, the merchants are generally the people who advance money to government. By advancing it they do not mean to diminiſh, but on the contrary, to increaſe their mercantile capitals; and unleſs they expected to ſell with ſome profit their ſhare in the ſubſcription for a new loan, they never would ſubſcribe. But if by advancing their money they were to purchaſe, inſtead of perpetual annuities, annuities for lives only, whether their own or thoſe of other people, they would not always be ſo likely to ſell them with a profit. Annuities upon their own lives they would always ſell with loſs; becauſe no man will give for an annuity upon the life

Annuities life of another whose age and state are nearly the same with his own, the same price which he would give for one upon his own. An annuity upon the life of a third person, indeed, is, no doubt, of equal value to the buyer and the seller; but its real value begins to diminish from the moment it is granted, and continues to do so more and more as long as it subsists. It can never, therefore, make so convenient a transferable stock as a perpetual annuity, of which the real value may be supposed always the same, or very nearly the same.

Annuncia-da.

In France, before the revolution, the seat of government not being in a great mercantile city, merchants did not make so great a proportion of the people who advance money to government. The people concerned in the finances, the farmers general, the receivers of the taxes which were not in farm, the court bankers, &c. made the greater part of those who advance their money in all public exigencies. Such people were commonly men of mean birth, but of great wealth, and frequently of great pride. They were too proud to marry their equals, and women of quality disdained to marry them. They frequently resolved, therefore, to live bachelors; and having neither any families of their own, nor much regard for those of their relations, whom they were not always very fond of acknowledging, they desired only to live in splendour during their own time, and were not unwilling that their fortune should end with themselves. The number of rich people, besides, who were either averse to marry, or whose condition of life rendered it either improper or inconvenient for them to do so, was much greater in France than in England. To such people, who had little or no care for posterity, nothing could be more convenient than to exchange their capital for a revenue, which is to last just as long, and no longer, than they wish it to do.

ANNUITY OF TEINDS, in *Scots Law*, a certain proportion of the teinds of erected benefices formerly payable to the crown, but now gone into disuse.

ANNULAR, in a general sense, something in the form of, or resembling, a ring. It is also a peculiar denomination of the fourth finger, commonly called the *ring finger*.

ANNULET, in *Architecture*, a small square member in the Doric capital, under the quarter round.

ANNULET is also a narrow flat moulding, which is common to divers places of the columns, as in the bases, capitals, &c. It is the same member which Vitruvius calls a *fillet*; Palladio, a *listil* or *cincture*; Scamozzi, and Mr Brown, a *supercilium*, *list*, *tinea*, *eyebrow*, *square*, *rabbit*. See ARCHITECTURE.

ANNULET, a little circle, borne as a charge in coats of arms, as also added to them as a *difference*. Among the Romans it represented liberty and nobility. It also denotes strength and eternity, by reason of its circular form.

When this figure is added as a difference, some authors assert, that it serves to remind the bearer to achieve great actions.

ANNULLING, a term sometimes used for cancelling or making void a deed, sentence, or the like.

ANNUNCIADA, ANNUNTIADA, or ANNUNCIATA, an order of knighthood in Savoy, first instituted by Amadeus I. in the year 1409: their collar was of 15 links, interwoven one with another, in form of a true lover's knot; and the motto, F. E. R. T. signifying, *Fortitudo ejus Rhodum tenuit*. Amadeus VIII. gave the name *Annunciada* to this order, which was formerly known by that of *the knot of love*; changing at the same time the image of St Maurice patron of Savoy, which hung at the collar, for that of the Virgin Mary; and, instead of the motto above mentioned, substituting the words of the angel's salutation. Annuncia-da. Annunciades.

ANNUNCIADA is also the title of several religious orders, instituted at different times, and at different places, in honour of the annunication. See the next article.

ANNUNCIATION, the tidings brought by the angel Gabriel to the Virgin Mary of the incarnation of Christ.

ANNUNCIATION is also a festival, kept by the church on the 25th of March, in commemoration of these tidings. This festival appears to be of very great antiquity. There is mention made of it in a sermon which goes under the name of *Athanasius*. Others carry it up to the time of Gregory Thaumaturgus, because there is a sermon likewise attributed to him upon the same subject. But the best critics reject both these writings as spurious. However, it is certain, this festival was observed before the time of the council of Trullo, in which there is a canon forbidding the celebration of all festivals in lent, excepting the Lord's day, and the feast of the annunciation: so that we may date its original from the seventh century.

In the Romish church, on this feast, the pope performs the ceremony of marrying or cloistering a certain number of maidens, who are presented to him in the church, clothed in white serge, and muffled up from head to foot: An officer stands by, with purses containing notes of 50 crowns for those who make choice of marriage, and notes of a hundred for those who choose to veil.

ANNUNCIATION is likewise a title given by the Jews to a part of the ceremony of the passover.

ANNUNCIATOR, the name of an officer in the church of Constantinople. It was his business to inform the people of the festivals that were to be celebrated.

ANODYNE, (from α privative, and $\delta\delta\upsilon\nu\omega$, *doleo*; or α neg. and $\dot{\omega}\delta\upsilon\nu\eta$, *pain*), a term applied to medicines which ease pain, and procure sleep. They are divided into three sorts, viz. 1. Parerogics, or such as assuage pain. 2. Hypnotics, or such as relieve by procuring sleep. 3. Narcotics, or such as ease the patient by stupifying him.

Opiates and narcotics destroy sensation. Some hypnotics and paregorics, as nitre, camphor, &c. procure ease and sleep by removing the offending cause. Camphor is said to be the best anodyne in nervous cases and at the decline of fevers. The doses of these medicines are generally regulated by the pulse.

ANOINTERS, a religious sect in some parts of England, so called from the ceremony they used of anointing all persons before they admitted them into their church. They founded their opinion of anointing upon the fifth of James, ver. 14. and 15.

ANOLYMPIADES, in antiquity, a name given by the Elians to those Olympic games which had been celebrated under the direction of the Pisæans and Arcadians. The Elians claimed the sole right of managing the Olympic games, in which they sometimes

Anomalistical Year || Anomœans.

met with competitors. The hundred and fourth Olympiad was celebrated by order of the Arcadians, by whom the Elians were at that time reduced very low; this, as well as thoſe managed by the inhabitants of Piſa, they called ανολυμπιαδας, that is, "unlawful Olympiads;" and left them out of their annals, wherein the names of their victors and other occurrences were regiſtered.

ANOMALISTICAL YEAR, in *Aſtronomy*, the time that the earth takes to paſs through her orbit: it is alſo called the *Periodical Year*. The ſpace of time belonging to this year is greater than the tropical year, on account of the preceſſion of the equinoxes. See ASTRONOMY.

ANOMALOUS, a term applied to whatever is irregular, or deviates from the rule obſerved by other things of the like nature.

ANOMALOUS Verbs, in *Grammar*, ſuch as are not conjugated conformably to the paradigm of their conjugation. They are found in all languages. In Latin, the verb *lego* is the paradigm of the third conjugation; and runs thus, *lego, legis, legit:* by the ſame rule it ſhould be *fero, feris, ferit;* but we ſay *fero, fers, fert: fero*, then, is an anomalous verb. In Engliſh the irregularity relates often to the preter tenſe and paſſive participle: for example, *give*, were it formed according to rule, would make *gived* in the preter tenſe and paſſive participle; whereas, in the former, it makes *gave*, and in the latter *given*.

ANOMALY, in *Aſtronomy*, an irregularity in the motion of the planets, whereby they deviate from the aphelion or apogee.

ANOMIA, in *Zoology*, a genus of inſects belonging to the order of vermes teſtacea. The ſhell is bivalve, and the valves are unequal. One valve is perforated near the hinge; affixed by that perforation to ſome other body. There are 25 ſpecies of the anomia: of which only two are natives of the Britiſh ſeas, viz. 1. The ephippium, with the habit of an oyſter; the one ſide convex, the other flat, perforated; adherent to other bodies, often to oyſter ſhells, by a ſtrong tendinous ligature; colour of the inſide perlaceous. Size, near two inches diameter. 2. The ſquammula, with ſhells reſembling the ſcales of fiſh; very delicate, and ſilvery; much flatted; perforated; very ſmall. Adheres to oyſters, crabs, lobſters, and ſhells. This ſpecies of the genus are commonly called *Beaked Cockles*. No name has been given to the fiſh that inhabits it; for the recent ſhells of this kind are ſo very rare, that there is ſcarcely one to be found perfect. They are perhaps, as well as that which has given its form to the *cornu ammonis*, inhabitants of the deepeſt parts of the ocean; conſequently it muſt be ſome extraordinary agitation of that great body of water that can bring them at all to our knowledge in their recent ſtate. See CONCHOLOGY *Index*.

The foſſil ſpecies of the *Anomia* genus are uncommonly numerous in this iſland, in our chalk pits and limeſtone quarries; and in Glouceſterſhire they are as common on the ploughed lands as pebbles on other places.

ANOMOEANS, in eccleſiaſtical hiſtory, the name by which the pure Arians were called in the fourth century, in contradiſtinction to the Semi-Arians. The word is formed from the Greek, ανομοιος, *different, diſſimilar*: for the pure Arians aſſerted, that the Son was of a nature different from, and in nothing like, that of the Father: whereas the Semi-Arians acknowledged a likeneſs of nature in the Son; at the ſame time that they denied, with the pure Arians, the conſubſtantiality of the Word. The Semi-Arians condemned the Anomœans in the council of Seleucia; and the Anomœans in their turn condemned the Semi-Arians in the councils of Conſtantinople and Antioch, eraſing the work ομοιος, *like*, out of the Formula of Rimini and that of Conſtantinople.

Anomorhomboidia || Anorexia.

ANOMORHOMBOIDIA, in *Natural Hiſtory*, the name of a genus of ſpars; the word is derived from the Greek ανωμαλης, *irregular*, and ρομβοειδης, a *rhomboidal* figure. The bodies of this genus are pellucid cryſtalline ſpars of no determinate or regular external form, but always breaking into regularly rhomboidal maſſes; eaſily fiſſile, and compoſed of plates running both horizontally and perpendicularly through the maſſes, but cleaving more readily and evenly in a horizontal, than in a perpendicular direction; the plates being ever compoſed of irregular arrangements of rhomboidal concretions. Of this genus there are five known ſpecies. 1. A white, bright, and ſhattery one; found in great quantities in the lead mines of Derbyſhire, Yorkſhire, and Wales. 2. A milk-white, opaque, and ſhattery one, found in ſome parts of France, and very plentifully in Germany, and ſometimes in Wales and Scotland, and in the hills of Yorkſhire. 3. A hard, dull, and ſnow-white one, found in ſome of the mines in Derbyſhire, and in many of our northern counties. 4. A hard, gray, and pellucid one, found in the lead mines of Yorkſhire, and very common in Germany. And, 5. A pellucid and colourleſs one; this is found in the lead mines of Derbyſhire and Yorkſhire. All theſe in ſome degree have the double refraction of the Iceland cryſtal. See *ICELAND cryſtal*.

ANONIS. See ONONIS, BOTANY *Index*.

ANONYMOUS, ſomething that is nameleſs, or of which the name is concealed. It is a term uſually applied to books which do not expreſs the author's name, or to authors whoſe names are unknown.

ANONYMOUS in commerce. Partnerſhips in trade in France are ſtyled anonymous, when they are not carried on under any particular name, but wherein each of the partners trades viſibly on his own account, and in his own name; after which all the partners give one another an account of their profit or loſs in trade. Theſe ſorts of partnerſhips are concealed, and known only to the parties themſelves.

ANONYMOUS Partnerſhips in Trade, are alſo in France, ſuch, wherein perſons of fortune and quality depoſite ſums of money, in order to ſhare of the profits and loſs. To this end thoſe who furniſh the capital have no trouble in carrying on the trade, nor do their names appear to be any way intereſted therein.

ANONYMOUS, in *Law*. The ſending anonymous letters demanding money, &c. is felony by the Black Act, 9 Geo. I. cap. xxii.

ANOREXIA, ANOREXY, (from α negative, and ορεξις, *appetite*); a want of appetite, or a loathing of food. The diſorder is either original or ſymptomatic. When it is original, its cauſes are bad diet, too free drinking, voraciouſneſs, &c.: In which caſes, a vomit or two of ipecacuanha may be taken; and temperance, a light but cordial nourihing diet, and daily exerciſe, perſiſted

Anoſſi. perſiſted in, will generally effect a recovery. But it is more frequently a ſymptom of ſome other diſorder; and then the cure depends on the removal of the original one.

ANOSSI, a province of the iſland of Madagaſcar, lying between Lat. 23. 18. and 26. 0. S. It is watered by many rivers, moſt of which run into the *Franchere*, *Ramevatte*, or *Immour*, the ſpring of which is in a mountain called *Manghage*, and diſcharges itſelf into the ſea in Lat. 25. 18. S. The mouth of this river is often ſtopped, and the courſe to the ſea interrupted, unleſs kept open by the overflowings of great rains and high tides. The water runs ſalt one league above the mouth, particularly in a free communication with the ſea. A lake, called *Ambou*, is formed at the mouth, half a league wide, with depth ſufficient for any ſhip if the mouth of the river was kept open. Next in bigneſs to the Franchere, is the Manghaſia, which ſprings from a mountain called *Siliva*, and empties itſelf into the ſea, where large ſhips may ride at anchor. Crocodiles breed in theſe and all the other rivers of the iſland.

Between the two rivers above mentioned lies Cape St Romain, half a mile diſtant from the mouth of the Franchere, and which runs from the north-weſt ſix or ſeven leagues into the ſea. When the cape is paſſed the coaſt forms a great bay, in the ſhape of a croſs, which extends to the mouth of a river called *Dian Panouge* or *Pitorah*. In the middle of this bay the land runs out, and almoſt forms a peninſula called *Tholangare*. Fort Dauphin lies to the north of this peninſula, and Port Dauphin over againſt it. This province has ſeveral other peninſulas and ſmall iſlands belonging to it. The country is beautiful; abounds in fruit trees; is fertile in paſtures for cattle; and, if carefully cultivated, would produce all the neceſſaries of life. It is ſurrounded by high mountains, which are covered with woods and ſhrubs; but, about four miles diſtant from Fort Dauphin, the adjacent hills are quite deſtitute of verdure. The French often dug in this neighbourhood, expecting to meet with mines of gold and ſilver, particularly in one mountain where ſeveral ſprings flow near each other and empty themſelves into a neighbouring river. In this river they found ſeveral ſtones and heaps intermixed with yellow clay, with a great quantity of black and white ſpangles ſhining like ſilver, which they carefully pounded and waſhed, but without effect. About 60 yards above theſe ſprings the graſs, and every ſort of vegetable, appears half dried and yellow, from a metalline ſulphur, which gives that aſpect; but the top of the mountain is covered with a freſh and beautiful verdure. It is ſaid that the Portugueſe found gold at the foot of this mountain on the north ſide, but that the place they had dug was filled up by the chiefs of the country after the Portugueſe had been driven out.

The province of Anoſſi is inhabited by three different ſorts of whites, and four ſorts of negroes. The whites are diſtinguiſhed by the names of *Rohandrians*, *Anacandrians*, and *Ondzatſi*. The whites are diſtinguiſhed from the negroes by the general name of *Kaferamini* or *Rahimini*; and the Rohandrians are diſtinguiſhed above the other whites. When they proceed to an election of a ſovereign, whom they call *Ompiandrian*, or *Dian Bahouache*, he is choſen from the Rohandrian race. Next to him the others hold the rank of princes, and are honoured as ſuch by all the reſt of the ſubjects. The Anacandrians are deſcendants of the chiefs, but who have degenerated, and are accounted the baſtards of princes, or thoſe who are deſcended from a Rohandrian and any inferior white or black woman. Theſe are likewiſe called by the name of *Ontempaſſemaca*, or people from the ſame part of Mecca, from whence, they ſay, came the Rohandrians. Both the Rohandrians and Anacandrians wear long hair, which hangs down in curls; and enjoy the privilege of killing beaſts. The Ondzatſi, or loweſt claſs of whites, are deſcended from the baſtards of the Anacandrians. Theſe are all fiſhermen, and are allowed to kill no land animal except a chicken.

The four claſſes of negroes are named *Voadziri*, *Lohavohits*, *Ontſoa* and *Ondeves*. The Voadziri, the moſt powerful and the richeſt, are maſters of ſeveral villages; and deſcended from the original lords of the country. They enjoy the privilege of killing beaſts, when at a diſtance from the whites, and no Rohandrian or Anacandrian in the village. The Lohavohits are deſcendants from the Voadziri, and alſo lords; but with this difference, that the one commands a whole diſtrict, and the juriſdiction of the others extends only to their own village and family. They are alſo permitted to kill thoſe beaſts they intend to eat, when at a diſtance from the whites. The Ontſoa are next to the Lohavohits, and are their near relations. The Ondeves are the loweſt of all, being originally ſlaves by father and mother. The Voadziri, Lohavohits, and Ontſoa, enjoy the privilege of ſubmitting themſelves, on the death of their lord or king, to any chief they pleaſe. In return for ſuch homage, the new lord makes them a preſent, in conſequence of which he becomes heir to all their poſſeſſions. Hence the lower claſſes both of whites and blacks, when death approaches, are under the greateſt concern and anguiſh of mind, well knowing that their lords will not fail to deprive their children of every thing they poſſeſs. The Ondeves have not the ſame liberty with the others; but, in times of famine, the chiefs are obliged to ſupply them with neceſſaries; which if they fail to do, they have the liberty of ſubmitting themſelves to new maſters. The inhabitants of this province have no temples, and very little appearance of religion; only they keep up a cuſtom of immolating beaſts upon particular occaſions, as in ſickneſs, planting yams or rice, on aſſemblies, &c. They offer the firſt born beaſt to the devil and to God, naming the devil firſt, in this manner, *Dianbilis Aminhanhabare*, or "Lord Devil and God."—There are ſeveral towns on the river Franchere; and near this river the Portugueſe had a fort built upon a ſteep rock, and ſeveral buildings below, with encloſures, which furniſhed all ſorts of neceſſaries for their ſubſiſtence; but they were all maſſacred by the natives.

This province ſeems originally to have been inhabited by negroes. The whites or Zaferamini ſettled in it about 200 years ago, and conquered the negroes. But they themſelves were conquered by the French, though under the government of a king whom they honoured as a god. In 1642, Captain Rivault obtained permiſſion to eſtabliſh a colony in this part of the iſland; and accordingly he took poſſeſſion of it in the name of the king of France, in the month of September, that ſame

Anotta. year. The French landed 200 men, well armed, and provided with ſtore of ammunition and other neceſſaries for building a fort, which they immediately ſet about; but no ſooner did the natives obſerve their intention, than they uſed their utmoſt art to prevent their deſign from taking effect. This created a war, in which the French were victors; and, the natives becoming in time much better reconciled to them, they intermarried, and lived up and down in ſeveral towns at ſome diſtance from one another, not above five or ſix in a place. This tranquillity laſted for ſome years; but at laſt the natives, growing jealous, reſolved to free themſelves from a foreign yoke; and accordingly formed a conſpiracy to cut off all the French in one day; which they ſoon after effected, not leaving a ſingle perſon alive. In 1644 the above-mentioned Fort Dauphin was erected in Lat. 25. 6. S. Many buildings were erected, behind the fort, adjoining to the governor's houſe, with great incloſures that produced every ſort of fruit and kitchen herb. In 1656 it was accidentally deſtroyed by fire; but was ſoon after repaired, and ſtill continues, notwithſtanding the cataſtrophe above mentioned, and its garriſon carries on frequent wars with the natives.

ANOTTA, or ARNOTTA, in dyeing, an elegant red colour, formed from the pellicles or pulp of the ſeeds of the BIXA, a tree common in South America. It is alſo called *Terra Orleana*, and *Roucou*.

The manner of making anotta is as follows: The red ſeeds, cleared from the pods, are ſteeped in water for ſeven or eight days, or longer, till the liquor begins to ferment; then ſtrongly ſtirred, ſtamped with wooden paddles and beaters, to promote the ſeparation of the red ſkins; this proceſs is repeated ſeveral times, till the ſeeds are left white. The liquor, paſſed through cloſe cane ſieves, is pretty thick, of a deep red colour, and a very ill ſmell; in boiling, it throws up its colouring matter to the ſurface in form of ſcum, which is afterwards boiled down by itſelf to a due conſiſtence, and made up while ſoft into balls. The anotta commonly met with among us, is moderately hard and dry, of a brown colour on the outſide, and a dull red within. It is difficultly acted upon by water, and tinges the liquor only of a pale browniſh yellow colour. It very readily diſſolves in rectified ſpirit of wine, and communicates a high orange or yellowiſh red. Hence it is uſed as an ingredient in varniſhes, for giving more or leſs of an orange caſt to the ſimple yellows. Alkaline ſalts render it perfectly ſoluble in boiling water, without altering its colour. Wool or ſilk boiled in the ſolution acquires a deep, but not a very durable, orange dye. Its colour is not changed by alum or by acids, any more than by alkalies: but when imbibed in cloth, it is diſcharged by ſoap, and deſtroyed by expoſure to the air. It is ſaid to be an antidote to the poiſonous juice of manioc or caſſava.—Labat informs us, that the Indians prepare an anotta greatly ſuperior to that which is brought to us, of a bright ſhining red colour, almoſt equal to carmine: that, for this purpoſe, inſtead of ſteeping and fermenting the ſeeds in water, they rub them with the hand, previouſly dipped in oil, till the pellicles come off, and are reduced into a clear pulp; which is ſcraped off from the hands with a knife, and laid on a clean leaf in the ſhade to dry. De Laet, in his notes on Margrave's Natural Hiſtory of Brazil, mentions alſo two kinds of anotta; one of a permanent crimſon colour, uſed as a fucus or paint for the face; and another which gives a colour inclining more to that of ſaffron. This laſt, which is our anotta, he ſuppoſes to be a mixture of the firſt ſort with certain reſinous matters, and with the juice of the root of the tree. The wax or pulp in which the ſeeds are encloſed is a cool agreeable rich cordial, and has been long in uſe among the Indians and Spaniards in America, who ſtill mix it with their chocolate, both to heighten the flavour and raiſe the colour. It is ſaid to be a ſucceſsful remedy in bloody fluxes. The roots have much the ſame properties with the wax; but theſe are obſerved to work more powerfully by the urinary paſſages; they are uſed by ſome people in their broths, and ſeem to anſwer all the purpoſes of the pulp, but in a more faint degree. See BIXA, BOTANY *Index*.

Anout || Anſarians.

ANOUT, a ſmall iſland in the Schagerrack, or that part of the ſea of Denmark which has Norway on the north, Jutland on the weſt, and the iſle of Zeeland on the ſouth; it lies in 13. 0. E. Long. and 56. 36. N. Lat.

ANSÆ, in *Aſtronomy*, implies the parts of Saturn's ring projecting beyond the diſk of the planet.—The word is Latin, and properly ſignifies *handles*; theſe parts of the ring appearing like handles to the body of the planet.

ANSARIANS, a people of Syria, ſo called in the country, but ſtyled in De l'Iſle's maps *Enfarians*, and in thoſe of D'Anville, *Naſſaris*. The territory occupied by theſe Anſaria is that chain of mountains which extends from Antakia to the rivulet called *Nahr-el-Kabir*, or the Great River. The hiſtory of their origin, though little known, is yet inſtructive. The following account is from the *Bibliotheque Orientale* of Aſſemani, a writer who has drawn his materials from the beſt authorities.

"In the year of the Greeks 1202 (A. D. 891), there lived at the village of Naſar, in the environs of Koufa, an old man, who, from his faſtings, his continual prayers, and his poverty, paſſed for a ſaint. Several of the common people declaring themſelves his partizans, he ſelected from among them twelve diſciples to propagate his doctrine. But the commandant of the place, alarmed at his proceedings, ſeized the old man, and confined him in priſon. In this reverſe of fortune, his ſituation excited the pity of a girl who was ſlave to the gaoler, and ſhe determined to give him his liberty. An opportunity ſoon offered to effect her deſign. One day when the gaoler was gone to bed intoxicated, and in a profound ſleep, ſhe gently took the keys from under his pillow, and after opening the door to the old man, returned them to their place unperceived by her maſter: the next day when the gaoler went to viſit his priſoner, he was extremely aſtoniſhed at finding he had made his eſcape, and the more ſo ſince he could perceive no marks of violence. He therefore judiciouſly concluded he had been delivered by an angel, and eagerly ſpread the report, to avoid the reprehenſion he merited: the old man, on the other hand, aſſerted the ſame thing to his diſciples, and preached his doctrines with more earneſtneſs than ever. He even wrote a book, in which, among other things, he ſays, 'I ſuch a one, of the village of Naſar, have ſeen Chriſt who is the word of God, who is Ahmad, ſon of Mohammed, ſon of Hanafa, of the race of Ali;

who

Anſarians
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Anſelm.

who alſo is Gabriel: and he ſaid to me, Thou art he who readeth (with underſtanding); thou art the man who ſpeaketh truth; thou art the camel which preſerveth the faithful from wrath; thou art the beaſt which carrieth their burden; thou art the (Holy) Spirit, and John, the ſon of Zachary. Go, and preach to men that they make four genuflections in praying; two before the riſing of the ſun, and two before his ſetting, turning their faces towards Jeruſalem: and let them ſay, three times, God Almighty! God Moſt High! God Moſt Great! Let them obſerve only the ſecond and third feſtival; let them faſt but two days annually; let them not waſh the prepuce, nor drink beer, but as much wine as they think proper; and laſtly, let them abſtain from the fleſh of carnivorous animals. This old man paſſing into Syria, propagated his opinions among the lower orders of the country people, numbers of whom believed in him: And after a few years he went away, and nobody ever knew what became of him."

Such was the origin of theſe Anſarians, who are, for the moſt part, inhabitants of the mountains beforementioned.

The Anſaria are divided into ſeveral tribes or ſects; among which are diſtinguiſhed the Shamſia, or adorers of the ſun; the Kelbia, or worſhippers of the dog; and the Kadmouſia, who are ſaid to pay a particular homage to that part in women which correſponds to the priapus.

Many of the Anſaria believe in the metempſychoſis; others reject the immortality of the ſoul; and in general, in that civil and religious anarchy, that ignorance and rudeneſs which prevail among them, theſe peaſants adopt what opinions they think proper, following the ſect they like beſt, and frequently attaching themſelves to none.

Their country is divided into three principal diſtricts farmed by the chiefs called *Mokaddamim*. Their tribute is paid to the pacha of Tripoli, from whom they annually receive their title. Their mountains are in general not ſo ſteep as thoſe of Lebanon, and conſequently are better adapted to cultivation; but they are alſo more expoſed to the Turks; and hence, doubtleſs, it happens, that with greater plenty of corn, tobacco, wines, and olives, they are more thinly inhabited than thoſe of their neighbours the Maronites and the Druzes.

ANSE, an ancient town of France, in the Lyonnois, ten miles north of Lyons. Long. 6. 55. N. Lat. 45. 55.

ANSELM, archbiſhop of Canterbury, in the reigns of William Rufus and Henry I. He was born in the year 1033, at Aoſt, a town in Savoy at the foot of the Alps. He became a monk in the abbey of Bec in Normandy; of which he was afterwards choſen prior, and then abbot. In the year 1092, he was invited over to England by Hugh earl of Cheſter; and in the year following was prevailed on, as we are told, with great difficulty, to accept the archbiſhopric of Canterbury. He enjoined celibacy on the clergy; for which he was baniſhed by King Rufus, but recalled by Henry at his coming to the crown. He refuſed to conſecrate ſuch biſhops as were inveſted by the king, according to Pope Urban's decree; flatly denying it to be the king's prerogative; for this he was outed again; till, the pope and king agreeing, he was reſtored in 1107. In ſhort, from the day of his conſecration to that of his death, he was continually employed in fighting the prerogative of the church againſt that of the crown, and for that purpoſe ſpent much of his time in travelling backwards and forwards between England and Rome, for the advice and direction of his holineſs. At the council of Bari, in the kingdom of Naples, the pope being puzzled by the arguments of the Greeks againſt the Holy Ghoſt's proceeding from the Father, he called upon Anſelm, who was preſent, and he diſcuſſed their objections with great applauſe. Prieſts call him a reſolute ſaint; to other people he appears to have been an obſtinate and inſolent prieſt. He wrought many miracles, if we believe the author of his life, both before and after his death, which happened at Canterbury, in the 76th year of his age, anno 1109. He was canonized in the reign of Henry VII. Anſelm, though we may diſregard him as a ſaint, deſerves to be remembered as one of the principal revivers of literature, after three centuries of profound ignorance.

Anſelm

His works have been printed in different years, and at different places, viz. Nuremb. 1491. Paris 1544 and 1549. Venice 1549. Cologne 1573 and 1612. Lyons 1630. But the beſt is that of Father Gerberon, printed at Paris 1675. It is divided into three parts; the firſt contains dogmatical tracts, and is entitled *Monologia*; the ſecond contains practical and devotional tracts; the third part conſiſts of letters, in four books.

ANSER, the trivial name of a ſpecies of anas. See Anas, Ornithology *Index*.

Anser, in *Aſtronomy*, a ſmall ſtar, of the fifth or ſixth magnitude, in the milky way, between the ſwan and eagle, firſt brought into order by Hevelius.

ANSERES, the name which Linnæus gives to his third order of birds. See Ornithology *Index*.

ANSIBARII, or Ansivarii, an ancient people of Germany, ſituated ſomewhere in the neighbourhood of the Chauci. All we know of their hiſtory is, that, in the reign of the emperor Nero, they were driven from their own poſſeſſions by the Chauci. Being then in a forlorn condition, they took poſſeſſion of ſome uninhabited lands, which had been uſed as paſture for the horſes of the Roman ſoldiers. They were led by one Boiocalus, a man of great valour, and of known fidelity to the Romans. He remonſtrated to the Romans, who objected to their taking poſſeſſion of theſe lands, That the territory in diſpute was large; and requeſted, that it might be allowed to an unhappy people driven from their own habitations: that, at the ſame time, wide tracts might be retained for the horſes and cattle of the ſoldiers to graze in; that it was inconſiſtent with humanity to famiſh men in order to feed beaſts, &c. and at laſt, lifting up his eyes to heaven, he aſked the celeſtial luminaries how they could behold a deſolate ſoil, and if they would not more juſtly let looſe the ſea to ſwallow up uſurpers, who had engroſſed the whole earth? To this the Roman commander, Avitus, replied, That the weakeſt muſt ſubmit to the ſtrongeſt: and that ſince the gods, to whom they had appealed, had left the ſovereign judgment to the Romans, they were reſolved to ſuffer no other judges than themſelves. To Boiocalus himſelf, however, he privately offered lands as a reward for his long attachment to the Romans; but this offer the brave German rejected, as a price for betraying

Anſiko. betraying his people: adding, "A place to live in we may want, but a place to die in we cannot." The Anſibarii now invited the neighbouring nations to join them againſt the Romans; but they, dreading the power of that nation, refuſed to give them any aſſiſtance: upon which they applied to the neighbouring nations, begging leave to ſettle in their territories; but being everywhere driven out as enemies and intruders, theſe unhappy people were reduced to wander up and down till every one of them periſhed.

ANSIKO, a kingdom of Africa, bounded on the weſt by the river Umbre which runs into the Zaire, the kingdom of Wangua, and the Amboes who border on Loango; on the north, by ſome deſerts of Nubia; and on the ſouth, by Songo and Sonda, provinces of Congo. Here are great numbers of wild beaſts, as lions, rhinoceroſes, &c. and many copper mines. The king of Anſiko, or the great Macoco, commands 13 kingdoms, and is eſteemed the moſt powerful monarch in Africa. The inhabitants of Angola have a tradition, that this is the proper country of the Giagas, who came originally from Sierra Leona, and overran, like a torrent, the whole coaſt as far as Benguela; that, being weakened by numerous battles, and unable to force the defiles in order to return to Sierra Leona, they arrived on the borders of Monomotapa, where being defeated, they were forced to remain in the provinces of Anſiko. Be this as it will, the Anſikans yield not in the leaſt to the Giagas in fierceneſs and barbarity. They are ſo accuſtomed to the eating of human fleſh, that it is aſſerted they have markets where it is publicly ſold, and that there are no other graves for the dead than the bellies of the living. They try the courage of their priſoners of war by ſhooting at them as at marks, directing their arrows above or around their heads; and whoever diſcovers the leaſt ſigns of fear, is immediately devoured without remedy. Thoſe who appear intrepid and reſolute, have their noſes and ears bored, and two fore teeth of the upper jaw drawn. They are then improved in barbarity, by accuſtoming them to the moſt horrid cruelties.

The Anſikans are neat, well proportioned, and ſtrong; wandering about from place to place, without either ſowing or reaping. They are dreaded for their extreme brutality, and never traded with by the Europeans. Their language is barbarous, and difficult to be learned, even by the inhabitants of Congo. The moſt diſtinguiſhed among them wear red and black caps of Portugueſe velvet: the lower ranks go naked from the waiſt upwards; and, to preſerve their health, anoint their bodies with a compoſition of pounded white ſandal wood and palm oil. Their arms are battle axes, and ſmall but very ſtrong bows, adorned with ſerpents ſkins. Their ſtrings are made of ſupple and tender ſhoots of trees, that will not break, and their arrows of hard and light wood. Theſe people, who kill birds flying, ſhoot with ſuch ſurpriſing ſwiftneſs, that they can diſcharge 28 arrows from the bow before the firſt falls to the ground. With equal dexterity they manage their battle axes; one end of which is ſharpened like a wedge, and the other flattened like a mallet, with a handle ſet between, about half the length of the iron, rounded at the end like an apple, and covered with the ſkin of a ſerpent.—The current money in this country is the zimbis or ſhell, which is

Anſon, Anſer. fiſhed for, and paſſes among ſeveral African nations.—They worſhip the ſun as their chief deity; whom they repreſent by the figure of a man, and the moon by that of a woman. They have alſo an infinite number of inferior deities, each individual having a particular idol whom he addreſſes on certain occaſions.

ANSLO, a ſea port town of Norway, in the province of Aggerhuys, with a biſhop's ſee. The ſupreme court of juſtice is held here for Norway. It is ſeated on a bay of the ſame name. E. Long. 10. 14. N. Lat. 50. 24.

ANSON, George, a gentleman whoſe merit and good fortune, as a naval commander, exalted him to the rank of nobility. He was the ſon of William Anſon, Eſq; of Huckborough, in Staffordſhire; and, ſhowing an early inclination for the ſea, received a ſuitable education. The firſt command he enjoyed was that of the Weaſel ſloop in 1722; but the moſt memorable action of his life, and the foundation of his future good fortune, took place on his receiving the command of five ſhips, a ſloop, and two victuallers, equipped to annoy the Spaniards in the South ſeas, and to co-operate with Admiral Vernon acroſs the iſthmus of Darien; an expedition the principal object of which failed by the unaccountable delay in fitting him out. He ſailed, however, in Sept. 1740; doubled Cape Horn in a dangerous ſeaſon; loſt moſt of his men by the ſcurvy; and with only one remaining ſhip, the Centurion, croſſed the great Pacific ocean. If no conſiderable national advantage reſulted from this voyage, Commodore Anſon made his own fortune, and enriched his ſurviving companions, by the capture of a rich galleon on her paſſage from Acapulco to Manilla; with which he returned home round the Cape of Good Hope. If he was lucky in meeting this galleon, he was no leſs fortunate in eſcaping a French fleet then cruiſing in the Channel, by ſailing through it during a fog. He arrived at Spithead in June 1744. In a ſhort time after his return, he was appointed rear-admiral of the blue, and one of the lords of the admiralty. In April 1745, he was made rear-admiral of the white, and the following year vice-admiral of the blue; at which time he was choſen to repreſent the borough of Heydon in parliament. In 1747, being on board the Prince George of 90 guns, in company with Admiral Warren, and 12 other ſhips, he intercepted, off Cape Finiſterre, a powerful fleet, bound from France to the Eaſt and Weſt Indies; when, by his valour and conduct, he again enriched himſelf and his officers, and at the ſame time ſtrengthened the Britiſh navy, by taking ſix men of war and four Eaſt Indiamen, not one of them eſcaping. The French admiral, M. Jonquiere, on preſenting his ſword to the conqueror, ſaid, *Monſieur, vous avez vaincu l'Invincible, et la Gloire vous ſuit*: "Sir, you have conquered the Invincible, and Glory follows you;" pointing to the ſhips, named the *Invincible* and the *Glory*, he had taken. For his ſignal ſervices, his late majeſty created him baron of Soberton in Hants. The ſame year he was appointed vice-admiral of the red; and, on the death of Sir John Norris, was made vice-admiral of England. In 1748 he was made admiral of the blue: he was afterwards appointed firſt lord of the admiralty, and was at length made admiral and commander in chief of his majeſty's fleet; in which rank

Anſpach || Ant-eggs.

rank he continued, with a very ſhort interval, until his death; and the laſt ſervice he performed was to convoy Queen Charlotte to England. He died in June 1762. No performance ever met with a more favourable reception, than the account of Anſon's voyage round the world. Though it is printed under the name of his chaplain, it was compoſed under his lordſhip's own inſpection, and from the materials he himſelf furniſhed, by the ingenious Mr Benjamin Robins.

ANSPACH, Marquisate of, a ſmall territory of Franconia, in Germany, bounded on the north by the biſhoprics of Wartſburg and Bamberg, which laſt likewiſe lies to the weſt; by the earldoms of Holach and Oeting, with the biſhopric of Aichſtet, on the ſouth; and the palatinate of Bavaria and the territory of Nuremberg on the eaſt. The country is fruitful, and interſperſed with woods, which render it agreeable for hunting. Beſides the city Anſpach, which is the capital, the chief towns are Kreglin, Swaſbach, Kreilſheim, Rot, and Waſſer-Truding.

Anspach is a ſmall but pretty town, very well built, and has ſeveral churches. It is walled round, but has no other fortifications. In the palace there is a remarkable cabinet of curioſities. It is ſeated on a river of the ſame name, and belongs to the houſe of Brandenburg. E. Long. 10. 42. N. Lat. 49. 14.

ANSPESSADES, in the French armies, a kind of inferior officers in the foot, below the corporals, but above the common ſentinels. There are uſually four or five of them in a company.

ANSTRUTHER, Easter and Wester, two royal boroughs of Scotland, ſituated on the ſouth-eaſt coaſt of the county of Fife, in W. Long. 2. 25. N. Lat. 56. 20.

ANT, in *Zoology*. See Formica and Termes.

Ant-Bear, or *Ant-eater*, in *Zoology*. See Myrmecophaga.

Ant-Eggs, a name popularly given to a kind of little white balls found in the banks or neſts of ants, ordinarily ſuppoſed to be the ova of this inſect.

Late naturaliſts have obſerved that theſe are not properly the ants eggs, but the young brood themſelves in their firſt ſtate; they are ſo many little vermiculi wrapped up in a film, or ſkin, compoſed of a ſort of ſilk, which they ſpin out of themſelves as ſilkworms and caterpillars do. At firſt they are hardly obſerved to ſtir: but, after a few days continuance, they exhibit a feeble motion of flexion and extenſion; and begin to look yellowiſh and hairy, ſhaped like ſmall maggots, in which ſhape they grow up till they are almoſt as large as ants. When they paſs their metamorphoſis, and appear in their proper ſhape, they have a ſmall black ſpeck on them cloſe to the anus of the encloſed ant, which M. Leeuwenhoek probably enough imagines to be the fæces voided by it. Dr Edward King opened ſeveral of theſe vulgarly reputed eggs; in ſome of which he found only a maggot in the circumſtances above deſcribed; while in another the maggot had begun to put on the ſhape of an ant about the head, having two little yellow ſpecks, where the eyes were to be. In others, a further progreſs was obſerved, the included maggots being furniſhed with every thing to complete the ſhape of an ant, but wholly tranſparent, the eyes only excepted, which were as black as bugles. Laſtly, In others, he took out very perfect and complete ants, which immediately crept about among the reſt. Theſe ſuppoſed ants eggs are brought up every morning in ſummer, near the top of the bank, where they are lodged all the warm part of the day, within reach of the ſun's influence. At night, or if it be cool, or like to rain, they carry them down to a greater depth; ſo that you may dig a foot deep ere you come at them. The true ants eggs are the white ſubſtance which, upon opening their banks, appears to the eye like the ſcatterings of fine white ſugar, or ſalt, but very ſoft and tender. Examined by a microſcope, it is found to conſiſt of ſeveral pure white appearances, in diſtinct membranes, all figured like the leſſer ſort of birds eggs, and as clear as a fiſh's bladder. The ſame ſubſtance is found in the bodies of the ants themſelves. On this ſpawn, when emitted, they lie in multitudes, to brood, till in ſome time it is turned into little vermicules as ſmall as mites, commonly called *ants eggs*.

Ant-Hills, are little hillocks of earth, which the ants throw up for their habitation and the breeding of their young. They are a very great miſchief to dry paſtures, not only by waſting ſo much land as they cover, but by hindering the ſcythe in mowing the graſs, and yielding a poor hungry food pernicious to cattle. The manner of deſtroying them is to cut them into four parts from the top, and then dig into them ſo deep as to take out the core below, ſo that, when the turf is laid down again, it may lie ſomewhat lower than the level of the reſt of the land: by this means it will be wetter than the reſt of the land: and this will prevent the ants from returning to the ſame place, which otherwiſe they would certainly do. The earth that is taken out muſt be ſcattered to as great a diſtance every way as may be, otherwiſe they will collect it together and make another hill juſt by. The proper time for doing this is winter; and if the places be left open, the froſt and rains of that time of the year will deſtroy the reſt: but in this caſe care muſt be taken that they are covered up early enough in the ſpring, otherwiſe they will be leſs fertile in graſs than the other places. In Hertfordſhire they uſe a particular kind of ſpade for this purpoſe. It is very ſharp, and formed at the top into the ſhape of a creſcent, ſo that the whole edge makes up more than three fourths of a circle; this cuts in every part, and does the buſineſs very quickly and effectually. Others uſe the ſame inſtruments that they do for mole-hills. Human dung is a better remedy than all theſe, as is proved by experiment; for it will kill great numbers of them, and drive all the reſt away, if only a ſmall quantity of it be put into their hills.

Acid of Ants, an acid produced by diſtilling millions of theſe inſects, either without addition, or with water. It reſembles vinegar in many reſpects; but differs from it in forming cryſtals with magneſia, iron, and zinc. Its attractions are not yet determined, but are ſuppoſed to coincide with thoſe of vinegar.

ANTA, in the *Ancient Architecture*, a ſquare pilaſter, placed at the corners of buildings.

Anta, or *Ante*, a ſmall kingdom on the Gold coaſt of Africa, extending about ten leagues in length.—The country is covered with large trees, among which ſtand a number of fine villages. The ſoil is exceedingly rich, and the face of the country beautiful. The air

Antacids, Antæus

air is also much more salubrious than in other places of the Gold coast; it being observed by all writers, that the number of deaths here bears no proportion to that on any other part on the coasts of Guinea. This country contains the following villages, which deserve a particular description on account of the commerce they drive; viz. *Bourtrey*, *Tokorari*, *Sukoada*, and *Sama;* for which, see those articles.—Formerly Anta was potent and populous, inhabited by a bold and rapacious people, who greatly annoyed the Europeans by their frequent incursions; but by continual wars with their neighbours they are now greatly enfeebled, and the country in a manner depopulated. The spirit of the few remaining inhabitants is fled: they are desponding, dispirited, and abject, seeking protection from the Dutch and other Europeans who have forts on this coast, and looking upon them as their best friends.

ANTACIDS, in *Pharmacy*, an appellation given to all medicines proper to correct acid or sour humours.

Under the class of Antacids come, 1. Absorbents; as chalk, coral, sea-shells, hæmatites, and steel filings. 2. Obtundents; as oils and fats. 3. Immutants; as lixivious salts and soaps.

ANTÆUS, in fabulous history, a giant of Libya, son of Neptune and Terra. Designing to build a temple to his father, of men's sculls, he slew all he met; but Hercules fighting him, and perceiving the assistance he received from his mother (for by a touch of the earth he refreshed himself when weary), lifted him up from the ground and squeezed him to death.

Antæus was king of Mauritania; and from several circumstances, with which we are supplied by various authors, it appears extremely probable that he was the same person with Atlas: they were both of them the sons of Neptune, who reigned over Mauritania, Numidia, and a great part of Libya; as may be naturally inferred from his having such particular marks of distinction conferred upon him by the inhabitants of those regions. They both ruled with absolute power over a great part of Africa, particularly Tingitana. Hercules defeated and slew Antæus in the same war wherein he took the Libyan world from Atlas: both Atlas and Antæus invaded Egypt, and contended with Hercules in the wars with the gods, and were both vanquished by him. Antæus, as well as Atlas, was famed for his knowledge in the celestial sciences: from whence we may fairly conclude them to have been the same king of Mauritania.

Antæus, in his wars with Hercules, who commanded an army of Egyptians and Ethiopians, behaved with great bravery and resolution. Receiving large reinforcements of Libyan troops, he cut off vast numbers of Hercules's men; but that celebrated commander having at last intercepted a strong body of Mauritanian or Libyan forces sent to the relief of Antæus, gave him a total overthrow, wherein both he and the best part of his forces were put to the sword. This decisive action put Hercules in possession of Libya and Mauritania, and consequently of all the riches in those kingdoms; hence arose the fable that Hercules finding Antæus, a giant of an enormous size, with whom he was engaged in single combat, to receive fresh strength as often as he touched his mother earth when thrown upon her, at last lifted him up in the air and squeezed him to death. Hence likewise may be deduced the fable, intimating, that Hercules took Atlas's globe upon his own shoulders, overcame the dragon that guarded the orchards of the Hesperides, and made himself master of all the golden fruit. The golden apples, so frequently mentioned by the old mythologists, were the treasures that fell into Hercules's hands upon Antæus's defeat, the Greeks giving the Oriental word תפוח *riches*, the signification annexed to their own term, μηλα, *apples*. After the most diligent and impartial examination of all the different hypotheses of historians and chronologers, relating to Atlas and Antæus, we find none so little clogged with difficulties as that of Sir Isaac Newton. According to that illustrious author, Ammon, the father of Sesac, was the first king of Libya, or that vast tract extending from the borders of Egypt to the Atlantic ocean; the conquest of which country was effected by Sesac in his father's lifetime. Neptune afterwards excited the Libyans to a rebellion against Sesac; slew him, and then invaded Egypt under the command of Atlas or Antæus, the son of Neptune, Sesac's brother and admiral. Not long after, Hercules, the general of Thebais and Ethiopia for the gods or great men of Egypt, reduced a second time the whole continent of Libya, having overthrown and slain Antæus near a town in Thebais, from that event called Antæa or Antæopolis: this, we say, is the notion advanced by Sir Isaac Newton, who endeavours to prove, that the first reduction of Libya by Sesac happened a little above a thousand years before the birth of Christ, as the last by Hercules did some few years after.

Antagonist ‖ Antavare.

ANTAGONIST, denotes an adversary, especially in speaking of combats and games.

Antagonist Muscles, in *Anatomy*, those which have opposite functions; as flexors and extensors, abductors and adductors, &c.

ANTANACLASIS, in *Rhetoric*, a figure which repeats the same word, but in a different sense; as *dum vivimus vivamus*.

ANTAGOGE, in *Rhetoric*, a figure by which, when the accusation of the adversary is unanswerable, we load him with the same or other crimes.

ANTANDROS, in *Ancient Geography*, a town of Mysia, on the sea coast, at the foot of Mount Alexandria, a part of Mount Ida, (Strabo, Ptolemy): it was a town of the Leleges, (Strabo); anciently called *Edonis*, then, *Cimmeris*, (Pliny, Stephanus). It takes its name from Antandros, a general of the Æolians: it is now called *S. Dimitri*.

ANTAPHRODISIACS, in *Pharmacy*, medicines proper to diminish the semen, and consequently extinguish or lessen all desires of venery.

ANTARCTIC, in a general sense, denotes something opposite to the arctic or northern pole. Hence antarctic circle is one of the lesser circles of the spheres, and distant only 23° 30′ from the south pole, which is likewise called antarctic for the same reason.

ANTARES, in *Astronomy*, the name of a star of the first magnitude, called also the scorpion's heart. Its longitude is 60° 13′ 14″ of Sagittarius; and its latitude 43° 31′ 26″ south.

ANTAVARE, a province of the island of Madagascar, lying about 21° 30′ S. Lat. and bounded by the

Ante ‖ Antecurſores

the province and cape of Manouſi. The greateſt part of it is watered by the river Mananzari, whoſe ſource is in the red mountains of Ambohitſmene.

ANTE, in *Heraldry*, denotes that the pieces are let into one another in ſuch a form as there is expreſſed; for inſtance, by dove tails, round, ſwallow tails, or the like.

ANTEAMBULONES, in Roman antiquity, ſervants who went before perſons of diſtinction to clear the way before them. They uſed this formula, *Date locum domino meo*, i. e. "Make room or way for my maſter."

ANTECEDENT, in general, ſomething that goes before another, either in order of time or place.

ANTECEDENT, in *Grammar*, the words to which a relative refers.

ANTECEDENT, in *Logic*, is the firſt of the two propoſitions in an enthymeme.

ANTECEDENT, in *Mathematics*, is the firſt of two terms of a ratio, or that which is compared with the other.

ANTECEDENCE, in *Aſtronomy*, an apparent motion of a planet towards the weſt, or contrary to the order of the ſigns.

ANTECESSOR, one that goes before. It was an appellation given to thoſe who excelled in any ſcience. Juſtinian applied it particularly to profeſſors of civil law; and, in the univerſities of France, the teachers of law take the title *anteceſſors* in all their theſes.

ANTECURSORES, in the Roman armies, a party of horſe detached before, partly to get intelligence, proviſions, &c. and partly to chooſe a proper place to encamp in. Theſe were otherwiſe called *anteceſſores*, and by the Greeks *prodromi*.

ANTEDATE, among lawyers, a ſpurious or falſe date prior to the true date of a bond, bill, or the like. Antedate ‖ Antediluvian

ANTEDILUVIAN, in a general ſenſe, implies ſomething that exiſted before the flood.

Antediluvian World; the earth as it exiſted before the flood. See EARTH.

ANTEDILUVIANS, a general name for all mankind who lived before the flood, and ſo includes the whole of the human race from Adam to Noah and his family.

1 Chronology of the firſt ages.

As Moſes has not ſet down the particular time of any tranſaction before the flood, except only the years of the father's age wherein the ſeveral deſcendants of Adam in the line of Seth were begotten, and the length of their ſeveral lives; it has been the buſineſs of chronologers to endeavour to fix the years of the lives and deaths of thoſe patriarchs, and the diſtance of time from the creation to the deluge. In this there could be little difficulty were there no varieties in the ſeveral copies we now have of Moſes's writings; which are, the Hebrew, the Samaritan, and the Greek verſion of the Septuagint; but as theſe differ very conſiderably from one another, learned men are much divided in their opinion concerning the chronology of the firſt ages of the world; ſome preferring one copy, and ſome another.

That the reader may the better judge of the variations in the three copies in this period, they are exhibited in the following table, with the addition of thoſe of Joſephus as corrected by Dr Wells and Mr Whiſton.

A TABLE *of the Years of the Antediluvian Patriarchs.*

	Their ages at their ſons birth.				Years they lived after their ſons birth.			Length of their lives.		
	Heb.	Sam.	Sept.	Joſ.	Heb.	Sam.	Sept.	Heb.	Sam.	Sept.
Adam,	130	130	230	130	800	800	700	930	930	930
Seth,	105	105	205	105	807	807	707	912	912	912
Enos,	90	90	190	90	815	815	715	905	905	905
Cainan,	70	70	170	70	840	840	740	910	910	910
Mahalaleel,	65	65	165	65	830	830	730	895	895	895
Jared,	162	62	162	62	800	785	800	962	847	962
Enoch,	65	65	165	65	300	300	200	365	365	365
Methuſelah,	187	67	167	187	782	653	802	969	720	969
Lamech,	182	53	188	182	595	600	565	777	653	753
Noah was aged, at the flood.	600	600	600	600						
To the Flood,	1656	1307	2262	1556						

To this Table it will be neceſſary, in order to explain the conſequences of theſe variations, to add ſeparate chronological tables, ſhowing in what year of his contemporaries the birth and death of each patriarch happened, according to the computation of each of the ſaid three copies.

Antediluvians.

A Chronological TABLE *of the Years of the Patriarchs, according to the Computation of the Hebrew.*

	Years of the world.	Years of Seth.	Years of Enos.	Years of Cainan.	Years of Mahalaleel.	Years of Jared.	Years of Enoch.	Years of Methuſelah.	Years of Lamech.	Years of Noah.
Adam created, -	1									
Seth born, -	130									
Enos born, -	235	105								
Cainan born, -	325	195	90							
Mahalaleel born,	395	265	160	70						
Jared born, -	460	330	225	135	65					
Enoch born,	622	492	387	297	227	162				
Methuſelah born,	687	557	452	362	292	227	65			
Lamech born,	874	744	639	549	479	414	252	187		
Adam dies, -	930	800	695	605	535	470	308	243	56	
Enoch tranſlated,	987	857	752	662	592	527	365	300	113	
Seth dies, -	1042	912	807	717	647	582		355	168	
Noah born, -	1056		821	731	661	596		369	182	
Enos dies, -	1140		905	817	745	680		453	266	84
Cainan dies, -	1235			910	840	775		548	361	179
Mahalaleel dies,	1290				895	830		603	416	234
Jared dies, -	1422					962		735	548	366
Japhet born, -	1556							869	682	500
Shem born, -	1558							871	684	502
Lamech dies,	1651							964	777	595
Methuſelah dies,	1656			The Flood,				969		600

A Chronological TABLE *of the Years of the Patriarchs, according to the Computation of the Septuagint.*

	Years of the world.	Years of Seth.	Years of Enos.	Years of Cainan.	Years of Mahalaleel.	Years of Jared.	Years of Enoch.	Years of Methuſelah.	Years of Lamech.	Years of Noah.
Adam created, -	1									
Seth born, -	230									
Enos born, -	435	205								
Cainan born, -	625	395	190							
Mahalaleel born,	795	565	360	170						
Adam dies, -	930	700	495	305	135					
Jared born, -	960	730	525	335	165					
Enoch born, -	1122	892	687	467	327	162				
Seth dies, -	1142	912	707	517	347	182				
Methuſelah born,	1387		852	662	492	327	165			
Enos dies, -	1340		905	715	545	380	218			
Lamech born,	1474			849	679	514	352	187		
Enoch tranſlated,	1487			862	692	527	365	200		
Cainan dies, -	1535			910	740	575		248	61	
Noah born, -	1662				867	702		375	188	
Mahalaleel dies,	1690				895	730		403	216	28
Jared dies, -	1922					962		635	448	260
Japhet born, -	2162							875	688	500
Shem born, -	2164							877	690	502
Lamech dies, -	2227							940	753	565
Methuſelah dies,	2256							969		594
The Flood, -	2262									600

Antediluvians.

A

Antediluvians.

Antediluvians.

A Chronological Table of the Years of the Patriarchs, according to the Computation of the Samaritan Pentateuch.

	Years of the world.	Years of Seth.	Years of Enos.	Years of Cainan.	Years of Mahalaleel.	Years of Jared.	Years of Enoch.	Years of Methuſelah.	Years of Lamech.	Years of Noah.
Adam created, -	1									
Seth born, -	130									
Enos born, -	235	105								
Cainan born, -	325	195	90							
Mahalaleel born,	395	265	160	70						
Jared born, -	460	330	225	135	65					
Enoch born, -	522	392	287	197	127	62				
Methuſelah born,	587	457	352	262	192	127	65			
Lamech born, -	654	524	419	329	259	194	132	67		
Noah born, -	707	577	472	382	312	247	185	120	53	
Enoch tranſlated,	887	757	652	562	497	427	365	300	233	182
Adam dies, -	930	800	695	605	535	470		343	276	343
Seth dies, -	1042	912	807	717	647	582		462	388	335
Enos dies, -	1140		905	815	745	680		553	486	433
Japhet born, -	1207			882	812	747		620	553	500
Shem born, -	1209			884	814	749		622	555	502
Cainan dies, -	1235			910	840	775		648	581	528
Mahalaleel dies,	1290				895	830		703	636	583
Jared, Methuſelah, and Lamech, die,	1307		The Flood,			847		720	653	600

To the varieties exhibited in the two laſt tables, others might be added, by admitting the various readings of ſome numbers in the Samaritan and Septuagint: for as to the Hebrew copies, there is here a conſtant agreement among them.

The manuſcript from which the Samaritan Pentateuch was publiſhed, agrees exactly with the Samaritan numbers given by Euſebius. But St Jerome tells us, that in his time, there were ſome Samaritan copies which make Methuſelah 187 years old at the birth of Lamech, and Lamech 182 at the birth of Noah, juſt as the Hebrew does. Now if theſe numbers be approved as the true original numbers, the interval from the creation to the flood will be 1556 years; differing from the Hebrew computation but 100 years in the age of Jared at the birth of Enoch; and if this laſt be allowed to be a miſtake of the tranſcriber, by his dropping a number, and writing 62 inſtead of 162, as has been ſuſpected, the Samaritan will be perfectly reconciled with the Hebrew, and all difference between them vaniſh.

Scaliger, on the authority of an old Samaritan chronicle, having at the end a table of the years of the patriarchs to the time of Moſes, would correct two of the Samaritan numbers in Euſebius; viz. inſtead of 65, the age of Mahalaleel when he begat Jared, he thinks it ſhould be 75; and inſtead of 67, the age of Methuſelah when he begat Lamech, he would have it 77. By which alterations he reckons 20 years more to the flood than Euſebius and the manuſcript; that is, 1327. But, as he acknowledges the table, whereon he grounds theſe corrections, contains ſome great abſurdities, it ſeems unreaſonable to oppoſe it to the joint authority of Euſebius and the Samaritan manuſcript.

As to the Septuagint, in the common editions of that verſion, the age of Methuſelah at the birth of Lamech is 167; and conſequently the ſum of this period, according to them, is no more than 2242. But, in this caſe, Methuſelah will outlive the flood 14 years; and we may well wonder, with Euſebius, where he was preſerved. To obviate this objection, we are told, that, in ſome copies, Methuſelah is ſaid to have lived but 782 (not 802) years after the birth of Lamech, and no more than 949 in all. But the Alexandrian manuſcript entirely takes away the difficulty, by giving the ſame number in this place with the Hebrew.

Pezron is of opinion, that the age of Lamech, at the birth of Noah, ſhould be but 182, as it is both in the Hebrew and in Joſephus, ſuppoſing, with St Auſtin, that the preſent number is the error of the ſcribe who firſt copied the original Septuagint manuſcript in Ptolemy's library. So that he computes 2256 years to the flood. And, if this correction be admitted, and one more mentioned alſo by St Auſtin, viz. that Lamech lived 595 years after the birth of Noah, and not 565, as in the preſent copies, there will then remain no other difference between the Septuagint and the Hebrew than 600 years added to the ages of the ſix patriarchs when they begat their ſons, and Methuſelah will, conformably to the Hebrew and Samaritan, die in the year of the flood.

Having premiſed this chronological view, we ſhall proceed to the hiſtory of the antediluvian patriarchs.

2

Of the great progenitor we are told, that "the Lord God took the man and put him into the garden." Theſe words plainly indicate, that Adam was not created within the precincts of Paradiſe; and it is afterwards ſaid, upon his being turned out of the garden, "He Adam.

Paradiſe.

Antediluvians.

was ſent to till the ground whence he was taken."—As to the ſituation of this garden, concerning which there has been ſo much learned but uncertain inquiry, ſee the article PARADISE.

Adam was doubtleſs created in the prime of his life, with all his powers and faculties in the higheſt degree of ſtrength and vigour. His body would be graceful, and well proportioned; while his countenance was comely, and glowed with all the luſtre of youthful innocence. The poet thus deſcribes our firſt parents:

> Adam the goodlieſt man, of men ſince born
> His ſons; the faireſt of her daughters Eve.
> ——— for in their looks divine
> The image of their glorious Maker ſhone. MILTON.

Many have entertained an opinion (as mentioned under the article ADAM), that our firſt parent was created an adept in knowledge and in ſcience, a conſummate philoſopher, and an accompliſhed divine. But the very reverſe of this muſt be true, providing we give credit to the account which Moſes gives of him. If Adam was created with intuitive knowledge, for what end was he endowed with the ſenſes of a man, through which ideas might be conveyed to his mind, and make him capable of ſuch improvements as ariſe from experience and obſervation? And if he originally poſſeſſed ſuch a fund of valuable knowledge, why had he ſuch an ardent thirſt for an unwarrantable portion of more, and for the ſake of this additional pittance forfeited his happineſs and life? Beſides, if Adam was at firſt all light and knowledge, and was ſoon after reduced to a ſtate of ignorance and error, this tranſition would make a retrograde in the ſyſtem of nature, quite diſſimilar to that uniformity which obtains throughout the whole of the divine government and economy. Moſes introduces our firſt parents into life in the moſt natural manner, as having capacities to acquire knowledge, ſenſes to receive impreſſions from objects round them, and a ſufficient degree of reaſon to form a judgement of the things perceived: yet all theſe faculties can only be conſidered as ſo many inſtruments, by the exerciſe of which they might be enabled to diſcharge the duties of their future life.

Smellie's Tranſlation, vol. iii p. 20, &c. (the paſſage here abridged).

The following portrait of our firſt progenitor when he firſt came into life, drawn by the inimitable pencil of Buffon, is extremely beautiful, while it is diſſonant from no part of the Moſaic hiſtory. "Let us ſuppoſe a man in the ſame ſituation with him who firſt received exiſtence; a man whoſe organs were perfectly formed, but who was equally new to himſelf, and to every object which ſurrounded him. Were he to give a hiſtory of his thoughts, and of the manner in which he received impreſſions, he might give ſome ſuch information as this. I remember the moment when my exiſtence commenced. It was a moment replete with joy, with amazement and anxiety. I neither knew what I was, where I was, nor whence I came. I opened my eyes. But what an amazing increaſe of ſenſation! The light, the celeſtial vault, the verdure of the earth, the tranſparency of the waters, gave animation to my ſpirits, and conveyed pleaſures which exceed the powers of expreſſion. At firſt I believed that all theſe objects exiſted within me, and formed a part of myſelf. When, turning mine eyes to the ſun, his ſplendour overpowered me. I voluntarily ſhut out the light, and felt a ſmall degree of pain. During this moment of darkneſs, I imagined that I had loſt the greateſt part of my being. I was then rouſed with a variety of ſounds. The ſinging of birds and the murmuring breezes formed a concert, which excited moſt ſweet and enchanting emotions. I liſtened, and was convinced that theſe harmonious ſounds exiſted within me.—I made a ſtep forwards; and afterwards renewing my motion, I walked with my face turned towards the heavens; till I ſtruck againſt a palm tree, and felt ſome degree of pain. Seized with terror, I ventured to lay my hand upon the object, and perceived it to be a being diſtinct from myſelf, becauſe it did not, like touching my own body, give me a double ſenſation. I reſolved then to feel every object I ſaw, and had a ſtrong deſire to touch the ſun; but ſtretching out my hands to embrace the heavens, they met without any intermediate object. All objects appeared to me equally near; and it was not till after many trials that I learned to uſe my eye as a guide to my hand. At laſt the train of my ideas was interrupted, and I loſt the conſciouſneſs of my exiſtence. My ſleep was profound; but having no mode of meaſuring time, I knew nothing of its duration. When I awakened, I was aſtoniſhed to find by my ſide another form, perfectly ſimilar to my own. I conceived it to be another ſelf; and inſtead of loſing by my ſleep, I imagined myſelf to be double. I ventured to lay my hand upon this new being. With rapture and aſtoniſhment I perceived that it was not myſelf, but ſomething much more glorious and deſirable."

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This philoſophical detail coincides with the opinion, that, excepting what portions of knowledge Adam might acquire by the exerciſe of his ſenſes, his Maker taught him every thing that was neceſſary for his comfort and ſubſiſtence. But before the Almighty gave any inſtructions to our firſt parents, we muſt ſuppoſe he inſpired them with the knowledge of the meaning of every word which they heard him ſpeak; otherwiſe it would have been impoſſible that he could have had any ſuch communication with them. The words which they heard and were made to underſtand, being imprinted upon their memories, would ſerve as the foundation of a language, which they would afterwards increaſe and enlarge as new objects began to multiply, and hence give riſe to new terms and definitions.

One of the firſt leſſons taught to Adam by his infallible Director, would be the neceſſity of food for the ſupport of his life. Accordingly Moſes informs us, that for this purpoſe a grant was made him to eat of every tree of the garden, excepting one. At the ſame time it was made known to him, in what manner he was to repair the decays of nature, namely, by eating of *the tree of life*. Then, in order to qualify him for ſocial intercourſe, he was ordered to exerciſe his faculty of ſpeech, by giving names to different creatures. The author of the book of Eccleſiaſticus ſays of our firſt parents, "They received the uſe of the five operations of the Lord; and in the ſixth, he imparted to them underſtanding; and in the ſeventh, ſpeech to interpret the cogitations thereof." The meaning cannot be, that he gave them every word they were to pronounce, more than every idea which their ſenſes were to convey to their underſtanding. Our talents,

and

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and the exercise of them, may be both said to be given us of God; but whatever capacities we receive from him, it is supposed that we ourselves must improve them, before we can attain to any acquirements whatever. Although Adam had heard and understood the words of God, yet Moses does not give the least hint that he ever attempted to speak before this time. For if he had, as some imagine, innate knowledge and proper terms for every thing presented to him, what occasion was there to bring animals before him to see what names he would impose upon him? Some writers have endeavoured to turn into ridicule the whole of this transaction, and have asked, how could all creatures upon earth appear at one time before Adam? not only one, but many days would have elapsed before he could give each a name. But this objection arises from not understanding the words of Moses. What our translators render, to see what he would call THEM, is in the original, to see what name he would call IT. "And whatsoever Adam called IT (viz. the living creature), that was the name of IT." The meaning seems to be no more than this: God brought a few creatures to Adam, to make him try to name them; and whatever he called any of them, that continued to be its name. And no doubt he would denominate every animal before him, from its external appearance, from its size, its colour, or its voice: And in process of time, he would give names to all those creatures which Providence brought within his view, or with which he became afterwards acquainted.

The next thing in which God instructed Adam, though probably in a trance or vision, was his near relation to Eve, as being part of his own body. This piece of knowledge was imparted to him, in order to cement the greater love and affection between the two during the remaining period of their lives.

These, according to Moses, are all the transactions in which our first parents were interested during their abode in Paradise, till they lost their innocence, and forfeited the enjoyments of their happy situation. And nothing can be more evident, than that the instructions which they received bespoke the infantile state of their minds; though there is no doubt but further and higher dispensations of knowledge would have been communicated to them, as they became able to bear them, and had their minds matured by experience and reflection.

3 How long our first parents retained their innocence.

How long our first parents retained their innocence, we are nowhere told. Many assert that they fell on the very first day of their creation. But Moses mentions so many transactions on that day, as must have engrossed the whole of their attention, and prevented them from falling into such temptations as arise from indolence and want of reflection. Besides, if, in such circumstances as they were placed, they could not refrain from an open violation of the Divine law for the space of one day, it would bespeak a deceitfulness of heart in them greater than in most of their posterity. It is somewhat singular, that many of the great trials recorded in sacred writing were limited to 40 days; which in prophetic style is sometimes equivalent to 40 years. This appears from the history of Moses, of Elijah, of Nineveh, and of the Jewish nation after the death of Christ. And, what is very remarkable, he, of whom Adam was a type, was tempted 40 days in the wilderness. Agreeable to this part of the Divine economy, perhaps the trial of our first parents lasted so long. However, that they remained for a considerable time in the garden, appears highly probable from this consideration, that their indulgent Creator, who had manifested his tender concern for them while innocent, and extended his mercy to them when fallen, would never have turned them out of paradise, and sent them into an uncultivated world, before they had acquired the arts of living, and were capable of providing against the vicissitudes of their future lot. The particulars of this memorable transaction are considered under the article FALL.

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Moses gives us no further account of Adam's life after leaving the garden, but that he begat some children, and died at such an age. Yet we have no reason to doubt, but the venerable patriarch ever after led a life of penitence, and of the strictest piety. The various communications which he had enjoyed with his Maker in paradise, and which were probably renewed to him after his fall, could not fail to make the deepest impressions upon his mind. The gracious respite he had met with, from the execution of the sentence denounced against him, would make him cautious of offending for the time to come; lest the next violation of the Divine authority should put an end to his existence. The *cherubim and flaming sword*, or the devouring flame, on the *east of Eden* (which might continue burning all his life), would be to him what the vestiges of the ark were to Noah and his sons, an awful memorial of the danger of incurring the Divine displeasure. Besides, his worldly comforts being in a great measure withdrawn, his mind would be naturally disposed for relishing those pleasures which flow from piety and religion.

4 Of their progeny.

The first thing which we hear of Adam in his new situation was, that *he knew Eve his wife, and she conceived and bare Cain.* Afterwards, we are told, she bare Abel. When the brothers were grown up, they betook themselves to distinct employments; the former to husbandry, and the latter to the keeping of sheep. Their inward dispositions were still more different; Cain being wicked and avaricious, but Abel just and virtuous.

In process of time they brought their respective offerings to God; Cain of the fruit of the ground, and Abel of the firstlings of his flock: but they met with very different success; for God accepted the offering of Abel, but Cain's he did not accept; the consequences of which are related under the articles ABEL and CAIN.

Soon after the murder of Abel, his loss was made up to his parents in another son they had, whom Eve named *Seth*, that is, "appointed;" because he was appointed instead of Abel whom Cain slew.

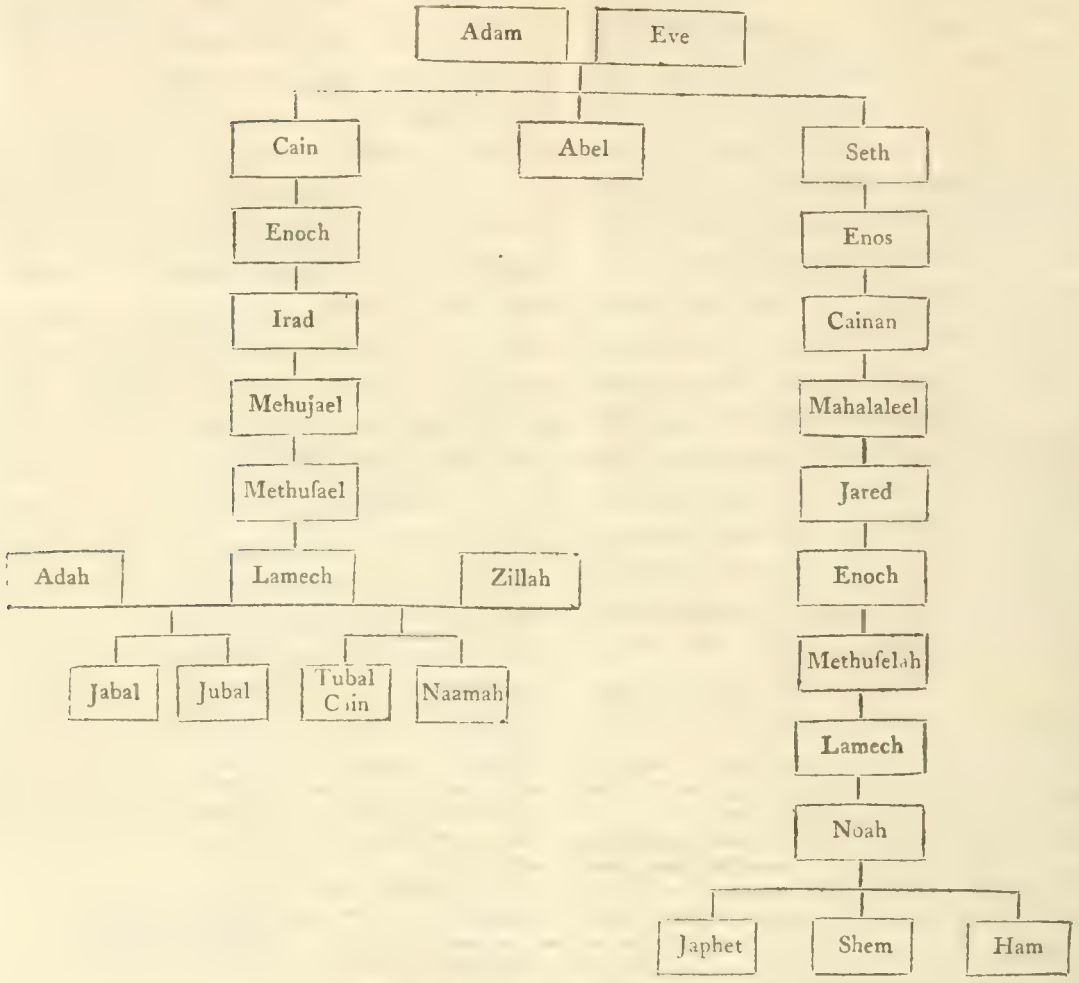
As the whole progeny of Adam, of whom we have any mention in Scripture, were the descendants of Cain and Seth, it may be proper to give the following

Genealogical

Antedilu-vians.

Antedilu-vians.

Genealogical TABLE *of the* ANTEDILUVIANS.



On the line of Cain.

The ſacred hiſtorian, confining himſelf chiefly to the line of Seth, from whence Noah was deſcended, has acquainted us with very few particulars relating to that of Cain: nor can we thus form any conjectures how long he or any of his deſcendants lived. All we know is, that Lamech, the fifth in deſcent from him, married two wives, Adah and Zillah, the firſt known inſtance of polygamy: that by the former he had two ſons, Jabal, who was the firſt that dwelt in tents, and fed cattle, and Jubal, the inventor of muſic; and by the other, a ſon named Tubal-Cain, who found out the art of forging and working metals. Zillah likewiſe brought him a daughter named Naamah, ſuppoſed to have invented ſpinning and weaving: and we are told that, on ſome occaſion or other, Lamech made a ſpeech to his wives, the explication of which has greatly puzzled the interpreters. See LAMECH.

6 The line of Seth. *Mill's Plea for the Divine Lectures*, p. 245, &c.

Moſes proceeds to tell us, that Seth had a ſon born to him called *Enos*, and that *then began men to call upon the name of the Lord*. Commentators give us three different ſenſes of theſe words. Some think the words ſhould be rendered, *Then men profaned in calling on the name of the Lord;* and that even Enos arrogated to himſelf a power, as if he had been a god. But this ſenſe ſeems harſh and unnatural. There is nothing more unlikely, than that Adam's grandchildren, who lived under his own eye, would ſo ſoon ſhake off parental authority, and apoſtatize from the belief and worſhip of the one true God. Others think, that though men had hitherto worſhipped God in private, yet they now inſtituted public aſſemblies, met in larger ſocieties for ſolemn and ſocial worſhip, and introduced liturgies and forms for more effectually paying their homage to the Almighty. This indeed is a very natural comment from thoſe who place religion in modes and ſet forms of worſhip. But it is ſcarcely credible, that Adam and his family had never met together to worſhip God till now, when we are told that Cain and Abel, and probably both their families along with them, brought their offerings to the Lord; this they no doubt did every Sabbath day. Others, therefore, put a more conſiſtent interpretation upon the words,

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Of the three next deſcendants of Seth, Cainan, Mahalaleel, and Jared, and of Methuſelah and Lamech, the grandfather and father of Noah, Moſes has recorded no more than their ſeveral ages. The oriental authors commend them, as they do Seth and Enos, for their piety, and the ſalutary injunctions they left behind them, forbidding their children all intercourſe with the race of curſed Cain.

Enoch the ſon of Jared, and father of Methuſelah, was a perſon of moſt extraordinary piety, *walking with God*, as the Scripture expreſſes it, for at leaſt the laſt three hundred years of his life; as a reward for which exemplary behaviour in ſo corrupt an age, he was taken up by God into heaven, without taſting death. See ENOCH.

7 Corruption of the human race. Moſes afterwards informs us, *When men began to multiply*, i. e. when the earth was filled with inhabitants, and tribes formerly living remote began to approach nearer to one another, *Daughters were born unto them:* meaning in greater abundance than formerly; which ſeems to hint, that at this period there were conſiderably more females than males born into the world. Some think that Moſes, being now about to mention the wickedneſs of the Antediluvians, introduces the poſterity of Cain as being the chief cauſe of their corruption; and that he ſtyles them *men* and *daughters of men*, becauſe they were ſenſual and earthly; in which ſenſe the word *men* is ſometimes uſed in the Scriptures.

The ſons of God ſaw the daughters of men that they were fair; and they took them wives of all that they choſe. Theſe words have given riſe to many abſurd and ridiculous comments both of Jews and Chriſtians. There are two meanings affixed to them, which may be mentioned as the moſt probable. Whenever the name of God is added to any thing, it not only denotes God's being the efficient cauſe, but it heightens and increaſes its uſual meaning. For which reaſon any thing that is excellent in its kind, or uncommonly lofty and magnificent, was by the Jews ſaid to be of God, or of the Lord. Thus the angels are called the *ſons of God*. And Adam being created with a nobler image than any other creature, is ſaid to be made in the *image of God*. The cedars of Lebanon are called the *cedars of the Lord*; and great mountains, the *mountains of God*. Therefore by the *ſons of God* in this place are meant men of great opulence, power, and authority. And by way of contraſt, the hiſtorian introduces thoſe of poor and mean circumſtances in life, and calls them the *daughters of men*. The words thus explained, are not an unlikely deſcription of that diſſolute age. The great and mighty in this world are commonly moſt addicted to ſenſual gratifications, becauſe they have ſo many incentives to inflame their paſſions, and ſo few reſtraints to curb them; and, inſtead of uſing their power to puniſh and diſcountenance vice, are too often the greateſt examples and promoters of laſciviouſneſs and debauchery. Thus, theſe *ſons of God*, theſe great men, when they happened to meet with the daughters of their inferiors, gazed upon them as fit objects to gratify their luſt; and from among theſe they *took to themſelves*, in a forcible manner, *wives*, or (as it may be rendered) *concubines, of all that they choſe*, whether married or unmarried, without ever aſking their conſent. No wonder, then, that the earth ſhould be *filled with violence*, when the higheſt rank of men were above the reſtraint of law, of reaſon, and religion, and not only oppreſſed the poor, but with impunity treated them and their children in ſuch a baſe and cruel manner. Antediluvians.

But there are other writers who cannot reliſh the above opinion; becauſe they think it a harſh and unnatural conſtruction, to call great and powerful perſons the *ſons of God*, and all mean and plebeian women the *daughters of men*. Beſides, the text does not ſay, that the *ſons of God* offered any violence to theſe inferior women; but that they ſaw that they were *fair*, and made choice of them for wives. And wherein is the heinouſneſs of the offence, if men of a ſuperior rank marry their inferiors, eſpecially when an exceſs of beauty apologizes for their choice? Or why ſhould a few unequal matches be reckoned among the cauſes of bringing upon the world an univerſal deſtruction? For theſe reaſons many are of opinion, that the deſcendants of Seth, who were ſtyled the *ſons of God* on account of their near relation to him, ſaw the *daughters of men*, i. e. the impious progeny of Cain, and by intermarriages became aſſociated with them; and ſurrendering to thoſe enchantreſſes their hearts and their freedom, they ſurrendered at the ſame time their virtue and their religion. From this union proceeded effects ſimilar to what has happened ever ſince. When a pure ſociety mixes with a profane, the better principles of the one become ſoon tainted by the evil practices of the other; which verifies the old adage, *Evil communication corrupts good manners*. Thus it appears, that the great ſource of univerſal degeneracy was owing to the poſterity of Seth mingling with the progeny of Cain, in oppoſition to what their pious fathers had ſtrictly charged them. Moſes, p. 265.

It is afterwards ſaid, *There were giants in the earth in thoſe days: and alſo after that, when the ſons of God came in unto the daughters of men, and they bare children to them, the ſame became mighty men, which were of old men of renown.* Tranſlators are not agreed about the meaning of the word *giants*. Some render the word, *violent and cruel men*; others, men who *fall upon* and *ruſh forward*, as a robber does upon his prey: the meaning then is, that they were not more remarkable for their ſtrength and ſtature, than for their violence and cruelty. In Luther's German tranſlation of the Bible, this word is rendered *tyrants*. It is generally agreed, that in the firſt ages of the world, men were of a gigantic ſtature; though Moſes does not mention them as giants till after the union of the families of Seth and Cain, when men uſed their ſuperiority in bodily ſtrength for the purpoſes of gratifying their unhallowed paſſions.

At this period of the world, and long after, political power and bodily ſtrength went hand and hand together

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gether. Whoever was able to encounter and kill a fierce and dangerous wild beaſt, and clear the country of noxious animals, or who was able in the day of battle to deſtroy moſt of his enemies, was looked up to by the reſt of his companions as the fitteſt to be their leader and commander. Thus Nimrod, from being a *mighty hunter*, became a great king, and, graſping at power, was never ſatisfied till every obſtacle to his ambition was removed. And it appears from hiſtory, that all his ſucceſſors have pretty nearly trodden in the ſame path. Theſe *giants* then, or *ſons of God*, might be the chief warriors, who formed themſelves into choſen bands, and living among a cowardly and effeminate people, had no curb to their cruelty and luſt. From them might ſpring an illegitimate race, reſembling their fathers in body and mind, who, when they grew up, having no inheritance, would be turned looſe upon the world, and follow no other employment but theft, rapine, and plunder. Thus they became *mighty men* and *men of renown, and procured themſelves a name*: but this was owing to the miſchief they did, and the feats of ſavage cruelty which they performed.

8 God's forbearance.

Mankind running thus headlong into all manner of vice, were admoniſhed to repent; and God, out of his great mercy, was pleaſed to grant them a convenient time for that purpoſe; no leſs than 120 years, during which ſpace, but no longer, he declared his Spirit ſhould "ſtrive with man," or endeavour to awaken and reclaim them from their wicked courſe of life.

Amidſt this general corruption, one man, however, was found to be juſt and perfect in his generation, walking with God. This extraordinary perſon was Noah, the ſon of Lamech; who, not thinking it ſufficient to be righteous himſelf, unleſs he did his utmoſt to turn others likewiſe to righteouſneſs by admonition as well as example, became a preacher to the abandoned race among which he lived, employing both his counſel and authority to bring them to a reformation of their manners, and to reſtore the true religion among them. But all he could do was to no purpoſe; for they continued incorrigibly obſtinate; ſo that at length (as Joſephus tells us), finding himſelf and family in imminent danger of ſome violence in return for his good will, he departed from among them, with his wife and children.

9 Preaching of Noah.

10 Moſaical account.

On his departure, it is probable they fell into greater diſorders than before; having now none to controul, or even to trouble them with unwelcome advice. Moſes aſſures us, that the wickedneſs of man was great in the earth, and that every imagination of the thoughts of his heart was continually evil;" and that "the earth was corrupt and filled with violence, all flesh having corrupted his way upon the earth." Theſe words leave no room to inquire into the particular crimes of the Antediluvian world, which ſeems to have been overrun with a complication of all manner of diſhoneſty and wickedneſs, and filled all with violence and injuſtice towards one another.

11 The world repents of having made man.

Things being in this ſtate, God, as the ſacred hiſtorian pathetically expreſſes it, "repented that he had made man on earth, and it grieved him at his heart." And the time of forbearance being elapſed, he puſhed the ſentence of their utter deſtruction by a flood of waters; a ſentence which likewiſe included the beaſts of the earth, and every creeping thing, and the fowls of the air. But Noah found grace in the eyes of the Lord;" who had before acquainted him with his deſign of bringing a deluge on the earth, and directed him to make an ark, or veſſel, of a certain form and ſize, capable of containing not only himſelf and family, but ſuch numbers of animals of all ſorts as would be ſufficient to preſerve the ſeveral ſpecies, and again repleniſh the earth, together with all neceſſary proviſions for them. All theſe injunctions Noah performed; and, by God's peculiar favour and providence, he and thoſe that were with him ſurvived this tremendous calamity. See the article DELUGE.

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12 Traditional hiſtory of the Antediluvians.

As to any further tranſactions before the flood, we are left entirely in the dark by the ſacred hiſtorian. The Jews and eaſtern nations, however, have made ample mends for the ſilence of Moſes, by the abundance of their traditions. The only part of theſe, which can be connected in any thing like hiſtory, is what follows.——After the death of Adam, Seth, with his family, ſeparated themſelves from the profligate race of Cain, and choſe for their habitation the mountain where Adam was buried, the Cainites remaining below, in the plain where Abel was killed; and, according to our hiſtorians, this mountain was ſo high, that the inhabitants could hear the angels ſinging the praiſes of God, and even join them in that ſervice. Here they lived in great purity and ſanctity of manners. Their conſtant employment was praiſing God, from which they had few or no avocations; for their only food was the fruit of the trees which grew on the mountain, ſo that they had no occaſion to undergo any ſervile labours, nor the trouble of ſowing and gathering in their harveſt. They were utter ſtrangers to envy, injuſtice, or deceit. Their only oath was, "By the blood of Abel; and they every day went up to the top of the mountain to worſhip God, and to viſit the body of Adam, as a mean of procuring the Divine bleſſing. Here, by contemplation of the heavenly bodies, they laid the foundations of the ſcience of aſtronomy; and left their inventions ſhould be forgotten, or loſt before they were publicly known, underſtanding, from a prediction of Adam's, that there would be a general deſtruction of all things, once by fire, and once by water, they built two pillars, one of brick, and the other of ſtone, that if the brick one happened to be overthrown by the flood or otherwiſe deſtroyed, that of ſtone might remain. This laſt, Joſephus ſays, was to be ſeen in his time in the land of Syriad, (thought to be in Upper Egypt).

The deſcendants of Seth continued in the practice of virtue till the 40th year of Jared, when an hundred of them hearing the noiſe of the muſic and the riotous mirth of the Cainites, agreed to go down to them from the holy mountain. On their arrival in the plain, they were immediately captivated by the beauty of the women, who were naked, and with whom they defiled themſelves; and this is what is meant by the intermarriage of the ſons of God with the daughters of men, mentioned by Moſes. The example of theſe apoſtate ſons of Seth was ſoon followed by others; and from time to time great numbers continued to deſcend from the mountain, who in like manner took wives from the abandoned race of Cain. From theſe marriages ſprung the giants (who, however, according to Moſes,

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Moſes, exiſted before); and theſe being as remarkable for their impiety as for their ſtrength of body, tyrannized in a cruel manner, and polluted the earth with wickedneſs of every kind. This defection became at laſt ſo univerſal, that none were left in the holy mountain, except Noah, his wife, his three ſons and their wives.

13 Profane Hiſtory. *Beroſus's Babylonian Antiquities.*

Beroſus, a Chaldean hiſtorian, who flouriſhed in the time of Alexander the Great, enumerates ten kings who reigned in Chaldea before the flood; of whom the firſt, called *Alorus*, is ſuppoſed to be Adam, and Xiſuthrus, the laſt, to be Noah.—This Alorus declared that he held his kingdom by divine right, and that God himſelf had appointed him to be the paſtor of the people. According to our hiſtorian, in the firſt year of the world, there appeared out of the Red ſea, at a place near the confines of Babylonia, a certain *irrational* animal called *Oannes*. He had his whole body like that of a fiſh; but beneath his fiſh's head grew another of a different ſort (probably a human one). He had alſo feet like a man, which proceeded from his fiſh's tail, and a human voice, the picture of him being preſerved ever after. This animal converſed with mankind in the day-time, without eating any thing: he delivered to them the knowledge of letters, ſciences, and various arts: he taught them to dwell together in cities, to erect temples, to introduce laws, and inſtructed them in geometry: he likewiſe ſhowed them how to gather ſeeds and fruits, and imparted to them whatever was neceſſary and convenient for a civilized life; but after this time there was nothing excellent invented. When the ſun ſet, Oannes retired into the ſea, and continued there all night. He not only delivered his inſtructions by word of mouth, but, as our author aſſures us, wrote of the origin of things, and of political economy. This, or a ſimilar animal, is alſo mentioned by other authors.

Of Alaſporus, the ſecond king, nothing remarkable is related. His ſucceſſor, Amelon, or Amillarus, was of a city called *Pantabibla*. In his time another animal reſembling the former appeared, 260 years after the beginning of this monarchy. Amelon was ſucceeded by Metalarus; and he by Daonus, all of whom were of the ſame city. In the time of the latter, four animals of a double form, half man and half fiſh, made their appearance. Their names were *Euedocus*, *Eneugamus*, *Encubulus*, and *Anementus*. Under the next prince, who was likewiſe of Pantabibla, appeared another animal of the ſame kind, whoſe name was *Odacon*. All theſe explained more particularly what had been conciſely delivered by Oannes.

In the reign of the tenth king, Xiſuthrus, happened the great deluge, of which our author gives the following account: Cronus, or Saturn, appeared to Xiſuthrus in a dream, and warned him, that on the fifteenth of the month Dæſius mankind would be deſtroyed by a flood; and therefore commanded him to write down the original, intermediate ſtate, and end of all things, and bury the writings under ground in Sippara, the city of the ſun; that he ſhould alſo build a ſhip, and go into it with his relations and deareſt friends, having firſt furniſhed it with proviſions, and taken into it fowls and four-footed beaſts; and that, when he had provided every thing, and was aſked whither he was ſailing, he ſhould anſwer, *To the gods, to pray for happineſs to mankind.* Xiſuthrus did not diſobey; but built a veſſel, whoſe length was five furlongs, and breadth two furlongs. He put on board all he was directed, and went into it with his wife, children, and friends. The flood being come, and ſoon ceaſing, Xiſuthrus let out certain birds, which finding no food, nor place to reſt upon, returned again to the ſhip. After ſome days, let out the birds again; but they returned to the ſhip, having their feet covered with mud: but when they were let out the third time, they came no more to the ſhip, whereby [illegible] that the earth appeared again; and thereupon he made an opening between the planks of the ſhip, and [illegible] that it reſted on a certain mountain, he came out with his wife, and his daughter, and his pilot: and having worſhipped the earth, and raiſed an altar, and ſacrificed to the gods, he and thoſe who went out with him diſappeared. They who were left within in the ſhip, finding that Xiſuthrus and the perſons that accompanied him did not return, went out themſelves to ſeek for him, calling him aloud by his name; but Xiſuthrus was no more ſeen by them: only a voice came out of the air, which enjoined them, as their duty was, to be religious; and informed them, that on account of his own piety he was gone to dwell with the gods, and that his wife and daughter and pilot were partakers of the ſame honour. It alſo directed them to return to Babylon, and that, as the fates had ordained, they ſhould take the writings from Sippara, and communicate them to mankind; and told them, that the place where they were was the country of Armenia. When they had heard this, they offered ſacrifice to the gods, and unanimouſly went to Babylon; and when they came thither, they dug up the writings at Sippara, built many cities, raiſed temples, and rebuilt Babylon.

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14 Antediluvian kings of Egypt.

The Egyptians, who would give place to no nation, in point of antiquity, have alſo a ſeries of kings, who, as is pretended, reigned in Egypt before the flood; and, to be even with the Chaldeans, began their account the very ſame year that theirs does according to Beroſus.

There was an ancient chronicle extant among the Egyptians, not many centuries ago, which contained 30 dynaſties of princes who ruled in that country, by a ſeries of 113 generations, through an immenſe ſpace of 36,525 years, during which Egypt was ſucceſſively governed by three different races; of whom the firſt were the Auritæ, the ſecond the Meſtræi, and the third the Egyptians.

But this extravagant number of years Manetho (to whoſe remains we muſt chiefly have recourſe for the ancient Egyptian hiſtory) has not adopted; however, in other reſpects, he is ſuppoſed to have been led into errors in chronology by this old chronicle, which yet ſeems to have been a compoſition ſince Manetho's time.

15 Sanchoniatho's Phœnician hiſtory.

The account given by Beroſus is manifeſtly taken from the writings of Moſes; but we have another account of the firſt ages of mankind, in which no mention is made of the flood at all. This is contained in ſome fragments of a Phœnician author called *Sanchoniatho*, who is by ſome ſaid to have been contemporary with Gideon, by others to have lived in the days of King David; while ſome boldly aſſert there never was

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such a perſon, and that the whole is a fiction of Philo-Biblius in oppoſition to the books of Joſephus, written againſt Apion. To gratify the reader's curioſity, however, we have ſubjoined an account of the firſt ten generations mentioned by him, which are ſuppoſed by the compilers of the Univerſal Hiſtory to correſpond to the generations mentioned by Moſes before the flood.

Sanchoniatho having delivered his coſmogony, or generation of the other parts of the world, begins his hiſtory of mankind with the production of the firſt pair of mortals, whom Philo, his tranſlator, calls *Protogonus* and *Æon;* the latter of whom found out the food which was gathered from trees.

Their iſſue were called *Genus* and *Genea*, and dwelt in Phœnicia: but when the great droughts came, they ſtretched forth their hands to heaven towards the ſun; for him they thought the only God and Lord of heaven, calling him *Beelſamen*, which in Phœnician is *Lord of heaven*, and in Greek *Zeus*.

Afterwards from Genus, the ſon of Protogonus and Æon, other mortal iſſue was begotten, whoſe names were *Phos*, *Phur*, and *Phlox;* that is, *Light*, *Fire*, and *Flame*. Theſe found out the way of germinating fire, by the rubbing of pieces of wood againſt each other, and taught men the uſe thereof. They begat ſons of vaſt bulk and height, whoſe names were given to the mountains on which they ſeized: ſo from them were named Mount *Caſſius*, *Libanus*, *Antilibanus*, and *Brathys*.

Of theſe laſt were begotten Memrumus and Hypſuranius; but they were ſo named by their mothers, the women of thoſe times, who without ſhame lay with any man they could light upon. Hypſuranius inhabited Tyre, and he invented the making of huts of reeds and ruſhes and the papyrus. He alſo fell into enmity with his brother Uſous, who firſt invented a covering for his body out of the ſkins of the wild beaſts which he could catch. And when violent tempeſts of winds and rains came, the boughs in Tyre, being rubbed againſt each other, took fire, and burnt the wood there. And Uſous, having taken a tree, and broke off its boughs, was ſo bold as to venture upon it into the ſea. He alſo conſecrated two rude ſtones, or pillars, to fire and wind; and he worſhipped them, and poured out to them the blood of ſuch wild beaſts as had been caught in hunting. But when theſe were dead, thoſe that remained conſecrated to them ſtumps of wood and pillars, worſhipping them, and kept anniverſary feaſts unto them.

Many years after this generation came Agreus and Halicus, the inventors of the arts of hunting and fiſhing, from whom huntſmen and fiſhermen are named.

Of theſe were begotten two brothers, the inventors of iron and of the forging thereof: one of theſe, called *Chryſor*, the ſame with Hepheſtus, or Vulcan, exerciſed himſelf in words and charms and divinations: found out the hook, bait, and fiſhing line, and boats ſlightly built; and was the firſt of all men that ſailed. Wherefore he alſo was worſhipped after his death for a god: and they called him *Zeus Michius*, or Jupiter the engineer; and ſome ſay his brother invented the way of making walls of brick.

Afterwards from this generation came two brothers; one of whom was called *Technites*, or the Artiſt; the other *Geinus Autochthon*, [the home-born man of the earth.]. Theſe found out to mingle ſtubble, or ſmall twigs, with the brick earth, and to dry them in the ſun, and ſo made tyling.

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By theſe were begotten others; of which one was called *Agrus* [Field]; and the other *Agrouerus*, or *Agrotes* [Huſbandman], who had a ſtatue much worſhipped, and a temple carried about by one or more yoke of oxen, in Phœnicia; and among thoſe of Byblus he is eminently called the *greateſt of the gods*. Theſe found out how to make courts about men's houſes, and fences, and caves or cellars. Huſbandmen, and ſuch as uſe dogs in hunting, derive from theſe; and they are alſo called *Aletæ* and *Titans*.

Of theſe were begotten Amynus and Magus, who ſhowed men to conſtitute villages and flocks.

In theſe men's age there was one Eliun, which imports in Greek *Hypſiſtus* [the moſt high] and his wife was named *Beruth*, who dwelt about Byblus: and by him was begot one Epigerus, or Autochthon, whom they afterwards called *Uranus* [heaven]; ſo that from him that element which is over us, by reaſon of its excellent beauty, is called *heaven*: and he had a ſiſter of the ſame parents called *Ge* [the earth]; and by reaſon of her beauty the earth had her name given to it.

Hypſiſtus, the father of theſe, dying in fight with wild beaſts, was conſecrated, and his children offered ſacrifices and libations to him.—But Uranus taking the kingdom of his father, married his ſiſter Ge, and had by her four ſons; Ilus, who is called *Cronus*, [or Saturn]; Betylus; Dagon, who is Siton, or the god of corn; and Atlas: but by other wives Uranus had much iſſue.

As to the cuſtoms, policy, and other general circumſtances of the Antediluvians, we can only form conjectures.

The only thing we know as to their religious rites is, that they offered ſacrifices, and that very early, both of the fruits of the earth and of animals; but whether the blood and fleſh of the animals, or only their milk and wool, were offered, is a diſputed point.—

16
Arts, &c. of the Antediluvians.

Of their arts and ſciences, we have not much more to ſay. The Antediluvians ſeem to have ſpent their time rather in luxury and wantonneſs, to which the abundant fertility of the firſt earth invited them, than in diſcoveries or improvements, which probably they ſtood much leſs in need of than their ſucceſſors. The art of working metals was found out by the laſt generation of Cain's line; and muſic which they might be ſuppoſed to practiſe for their pleaſure, was not brought to any perfection, if invented, before the ſame generation. Some authors have ſuppoſed aſtronomy to have been cultivated by the Antediluvians, though this is probably owing to a miſtake of Joſephus: but it is to be preſumed, the progreſs they made therein, or in any other ſcience, was not extraordinary; it being even very doubtful whether letters were ſo much as known before the flood. See ALPHABET.

As to their politics and civil conſtitutions, we have not ſo much as any circumſtances whereon to build conjecture. It is probable, the patriarchal form of government, which certainly was the firſt, was ſet aſide when tyranny and oppreſſion began to take place, and much ſooner among the race of Cain than that of Seth. It ſeems alſo, that their communities were but few, and conſiſted

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consisted of vastly larger numbers of people than any former since the flood: or rather, it is a question, whether, after the union of the two great families of Seth and Cain, there were any distinction of civil societies, or diversity of regular governments, at all. It is more likely, that all mankind then made but one great nation, though living in a kind of anarchy, divided into several dissolute associations; which, as it was almost the natural consequence of their having, in all probability, but one common language, so it was a circumstance which greatly contributed to that general corruption which otherwise perhaps could not have so universally overspread the Antediluvian world. And for this reason chiefly, as it seems, so soon as the posterity of Noah were sufficiently increased, a plurality of tongues was miraculously introduced, in order to divide them into distinct societies, and thereby prevent any such total depravation for the future. See *Confusion of Tongues*.

Of the condition of the Antediluvians, Mr Whitehurst, in his *Inquiry into the original state and formation of the earth* *, has given us the following picture: "Under a mild and serene sky, and when the spontaneous productions of the earth were more than sufficient for the calls of nature, without art or labour, mankind had no need of any other protection from the inclemency of the seasons, nor of barns for winter's store, than the benevolent Author of nature had plentifully provided for them. Consequently, in a state of nature like this, there was no temptation to acts of violence, injustice, fraud, &c. every one having plenty and enough, each equally partook of the numerous blessings thus amply provided for him. Power and property being equally diffused, men lived together in perfect peace and harmony, without law, and without fear; therefore it may be truly said of the Antediluvians, that they slept away their time in sweet repose on the ever-verdant turf. Such apparently was the state of nature in the first ages of the world, or from the creation to the first convulsion in nature, whereby the world was not only universally deluged, but reduced to a heap of ruins." But our ingenious author, whose *Inquiry* is not professedly repugnant to revelation, seems here to have lost himself in a pleasing reverie. At least he has forgot to inform us, For what purpose, under such circumstances, he supposes the deluge to have been sent upon the earth; and, How we are to understand the account given by Moses, who represents the Antediluvians, not as an innocent race, quietly reposing on the ever-verdant turf, but as a corrupt generation, by whom "the earth was filled with violence."

* P. 282. 283.

17 Of the longevity of the Antediluvians.

One of the most extraordinary circumstances which occurs in the Antediluvian history, is the vast length of human lives in those first ages, in comparison with our own. Few persons now arrive at eighty or an hundred years; whereas, before the flood, they frequently lived to near a thousand: a disproportion almost incredible, though supported by the joint testimonies of sacred and profane writers. Some, to reconcile the matter with probability, have imagined that the ages of those first men might possibly be computed, not by solar years, but months; an expedient which reduces the length of their lives rather to a shorter period than our own. But for this there is not the least foundation; besides the many absurdities that would thence follow, such as their begetting children at about six years of age, as some of them in that case must have done, and the contracting of the whole interval between the creation and the deluge to considerably less than two hundred years, even according to the larger computation of the Septuagint.

Again: Josephus, the Jewish Rabbins, and most Christian divines, are of opinion, that before the flood, and some time after, mankind in general did not live to such a remarkable age, but only a few holy men of God, such as the patriarchs mentioned by Moses. They reason in this manner: Though the historian records the names of some men whose longevity was singular, yet that is no proof that the rest of mankind attained to the same period of life, more than that every man was then of a gigantic stature, because he says, *in those days there were giants upon the earth*. Besides, had the whole of the Antediluvians lived so very long, and increased in numbers in proportion to their age, before the flood of Noah, the earth could not have contained its inhabitants, even supposing no part of it had been sea. And had animals lived as long, and multiplied in the same manner as they have done afterwards, they would have consumed the whole produce of the globe, and the stronger would have extinguished many species of the weaker. Hence they conclude, that, for wise and good ends, God extended only the lives of the patriarchs, and a few beside, to such an extraordinary length.

But most writers maintain the longevity of mankind in general in the early world, not only upon the authority of sacred, but likewise of profane history. And for such a constitution, the moral reasons are abundantly obvious. When the earth was wholly unpeopled, except by one pair, it was necessary to endow men with a stronger frame, and to allow them a longer continuance upon earth for peopling it with inhabitants. In the infant state of every mechanical art, relating to tillage, building, clothing, &c. it would require many years experience to invent proper tools and instruments to ease men of their labour, and by multiplied essays and experiments to bring their inventions to any degree of maturity and perfection. Every part of their work must have been exceedingly arduous from such a penury and coarseness of tools, and must have required longer time and more strength of body than afterwards, when mechanical knowledge was introduced into the world. If parents at this period had not continued long with their children, to have taught them the arts of providing for themselves, and have defended them from the attacks of wild beasts, and from other injuries to which they were exposed, many families would have been totally extinguished. But one of the best and most valuable ends which longevity would answer was, the transmitting of knowledge, particularly of religious knowledge, to mankind. And thus, before writing was invented, or any such easy and durable mode of conveyance was found out, a very few men served for many generations to instruct their posterity, who would not be at a loss to consult living and authentic records.

18 Moral reasons for this longevity.

The natural causes of this longevity are variously assigned. Some have imputed it to the fertility of the Antediluvians, and the simplicity of their diet; alleging that they had none of those provocations to gluttony, which

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Antediluvians. which wit and vice have ſince invented. Temperance might undoubtedly have ſome effect, but not poſſibly to ſuch a degree. There have been many temperate and abſtemious perſons in later ages, who yet ſeldom have exceeded the uſual period.—Others have thought that the long lives of thoſe inhabitants of the old world proceeded from the ſtrength of their ſtamina, or firſt principles of their bodily conſtitutions: which might, indeed, be a concurrent, but not the ſole and adequate cauſe of their longevity; for Shem, who was born before the deluge, and had all the virtue of the antediluvian conſtitution, fell three hundred years ſhort of the age of his forefathers, becauſe the greateſt part of his life was paſſed after the flood.—Others have imputed the longevity of the Antediluvians to the excellency of their fruits, and ſome peculiar virtue in the herbs and plants of thoſe days. But to this ſuppoſition it has been objected, that as the earth was curſed immediately after the fall, its productions we may ſuppoſe gradually decreaſed in their virtue and goodneſs till the flood; and yet we do not ſee the length of men's lives decreaſe conſiderably, if at all, during that interval. Waving this objection, as the import of the curſe is variouſly interpreted, it appears certain that the productions of the earth were at firſt, and probably continued till after the deluge, of a different nature, from what they were in future times. Buffon ſuppoſes this difference may have continued gradually to diminiſh for many ages ſubſequent to that cataſtrophe. The ſurface of the globe (according to his theory) was in the firſt ages of the world leſs ſolid and compact; becauſe, gravity having acted only for a ſhort time, terreſtrial bodies had not acquired their preſent denſity and conſiſtence. The produce of the earth, therefore, muſt have been analogous to its condition. The ſurface being more looſe and moiſt, its productions would of courſe be more ductile and capable of extenſion. Their growth, therefore, and even that of the human body, would require a longer time of being completed. The ſoftneſs and ductility of the bones, muſcles, &c. would probably remain for a longer period, becauſe every ſpecies of food was more ſoft and ſucculent. Hence the full expanſion of the human body, or when it was capable of generating, muſt have required 120 or 130 years; and the duration of life would be in proportion to the time of growth, as is uniformly the caſe at preſent: For if we ſuppoſe the age of puberty, among the firſt races of men, to have been 130 years, as they now arrive at that age in 14 years, the age of the Antediluvians will be in exact proportion to that of the preſent race; ſince by multiplying theſe two numbers by ſeven, for example, the age of the preſent race will be 98, and that of the Antediluvians will be 910. The period of man's exiſtence, therefore, may have gradually diminiſhed in proportion as the ſurface of the earth acquired more ſolidity by the conſtant action of gravity: and it is probable, that the period from the creation, to the days of David, was ſufficient to give the earth all the denſity it was capable of receiving from the influence of gravitation; and conſequently that the ſurface of the earth has ever ſince remained in the ſame ſtate, and that the terms of growth in the productions of the earth, as well as the duration of life, have been invariably fixed from that period.

It has been further ſuppoſed, that a principal cauſe of the longevity under conſideration was the wholeſome conſtitution of the Antediluvian air, which, after the deluge, became corrupted and unwholeſome, breaking, by degrees, the priſtine craſis of the body, and ſhortening men's lives, in a very few ages, to near the preſent ſtandard. Antediluvians.

The temperature of the air and ſeaſons before that cataſtrophe are upon very probable grounds ſuppoſed to have been conſtantly uniform and mild: the burning heats of ſummer and the ſeverities of winter's cold were not then come forth, but ſpring and autumn reigned perpetually together: And indeed, the circumſtance above all others moſt conducive to the prolongation of human life in the poſtdiluvian world appears to be an equal and benign temperature of climate (ſee the article Longevity); whence it ſeems reaſonable to infer, that the ſame cauſe might have produced the ſame effect in the Antediluvian world.

Whether fleſh was permitted to be eaten before the deluge, is a queſtion which has been much debated. By the permiſſion expreſsly given to Noah, for that purpoſe after the flood, and God's aſſigning vegetables only for food to man, as well as beaſt, at the creation, one would imagine it was not lawful before: yet others have ſuppoſed, that it was included in the general grant of power and dominion given to Adam by God over the animal creation; and the diſtinction of beaſts into clean and unclean, which was well known before the flood, is inſiſted on as a ſtrong argument on this ſide. 20 Whether fleſh might be eaten before the flood.

But in anſwer to this it has been obſerved that, if ſo, it doth not appear what occaſion there was to renew this grant after the flood, and to add, "Every moving thing that liveth ſhall be food for you, even as the green herb have I given you all things." This ſurely implies that the green herb and fruits of the trees were all that was granted to man at firſt; but now, over and above that, was added the grant of animal food; for in a deed of gift, all is ſpecified that is given or granted, and whatever is not expreſsly mentioned is excluded, or not given. Here man's food is appointed and ſpecified; what is not expreſsly mentioned is therefore reſerved and not granted. Beſides, this grant or appointment of man's food reſpected not Adam only, but all his poſterity, till an additional grant was made.

To the animals no further grant was made than at firſt; but to man another was made immediately after his fall and expulſion from Paradiſe, implied in theſe words: "In the ſweat of thy face ſhalt thou eat bread, till thou return into the ground." This was in truth a puniſhment for his tranſgreſſion, as well as a grant of other food, but yet what was now become neceſſary to him. Paradiſe no doubt was planted with the moſt excellent fruits, ſufficient to have ſuſtained his life in health and vigour in his innocent ſtate; but after his tranſgreſſion, being thruſt out from that happy abode, and having then only the fruits of the common earth to feed on; which were not ſo nutritious as thoſe of Paradiſe, he ſtood in need of ſomething elſe to ſuſtain life, and therefore bread produced by culture and other preparations for his food was now added, which before was not neceſſary, and thence called the *ſtaff of life*. This ſeems a plain reaſon why bread was added after he came to live on the common earth; though

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though perhaps another reaſon alſo for that addition may be given from the change that happened in man's body after his fall. Bread being now become the ſtaff of life, Cain, the firſt man born, became a tiller of the ground, or an huſbandman; as the next in birth, Abel, became a keeper or feeder of ſheep.

As to the diſtinction between clean and unclean, this ſolely reſpected animals offered in ſacrifice in the Antediluvian world; as is evident from hence, that Noah, upon his coming out of the ark "took of every clean beaſt and of every clean fowl, and offered burnt offerings unto the Lord;" and that upon the grant of animal food to him and his poſterity, which was poſterior in time to the ſacrifice, there is not the leaſt mention of any diſtinction between clean and unclean with reſpect to food, but the very contrary, ſince the grant runneth: "Every moving thing that liveth ſhall be meat for you, even as the green herb have I given you all things." That diſtinction of clean and unclean as to food, came in with the law of Moſes, and was different from that of ſacrifices, there being ſeveral creatures clean for food which were not to be offered in ſacrifice.

But another objection here occurs. What occaſion was there for keeping ſheep, when none of them could be eaten? In anſwer to this, it has been obſerved, that ſheep and other animals might at this period be of great uſe to men beſides yielding them food. Their flocks, no doubt, conſiſted of ſuch creatures as were of the domeſtic kind, and ſuch as by the divine law were pronounced clean and fit for being offered in ſacrifice; therefore numbers would be kept for this very purpoſe. Their ſkins, beſides ſerving men as garments, might anſwer many other valuable intentions. Veſtments of hair and wool ſoon ſucceeded the ruder coverings of ſkins; conſequently great profit would be derived from ſuch animals as could be ſhorn, eſpecially in countries where the inhabitants led a paſtoral life and dwelt in tents. And we afterwards find that Abel's ſacrifice was of this kind. They might uſe ſeveral of theſe animals, as they ſtill do in ſome parts of the world, for bearing of burdens and drawing of carriages: for we may take it for granted that the firſt inventions for eaſing men of labour, would be of the ſimpleſt kind, and ſuch as came eaſieſt to hand. But keeping flocks of ſheep, goats, and ſuch like, would be of great utility, by affording quantities of milk, which is found to be the moſt nouriſhing diet both to the young and the old: and their carcaſes, though not uſed as food, might anſwer ſome uſeful purpoſes perhaps in manuring the ſoil.

21 Increaſe of mankind before the flood.

The Antediluvian world was, in all probability, ſtocked with a much greater number of inhabitants than the preſent earth either actually does, or perhaps is capable of containing or ſupplying. This ſeems naturally to follow from the great length of their lives, which exceeding the preſent ſtandard of life in the proportion, at leaſt, of ten to one, the Antediluvians muſt accordingly in any long ſpace of time double themſelves, at leaſt in about the tenth part of the time in which mankind do now double themſelves. It has been ſuppoſed that they began to beget children as early, and left off as late, in proportion, as men do now; and that the ſeveral children of the ſame father ſucceeded as quickly one after another as they usually do at this day, and as many great ones, which are but ſeldom ſeen with us, were contemporary before the flood, the number of people living on the earth at once would be by the ſame means greatly increaſed to anſwer any defect which might ariſe from other circumſtances not conſidered. In this, if we make a computation on theſe principles, we ſhall find, that there was a conſiderable number of people in the world at the death of Abel, though their father Adam was not then 130 years old; and that the number of mankind before the deluge would eaſily amount to above one hundred thouſand millions (even according to the Samaritan chronology), that is, to twenty times as many as our preſent earth has, in all probability, now upon it, or can well be ſuppoſed capable of maintaining in its preſent conſtitution.

The following table, made upon the above-mentioned principles by Mr Whiſton, ſhows at leaſt what a number of people might have been in the Antediluvian world.

Number of mankind.	Year of the world.	Year of doublings.	Series.
4	2	2	1
8	6	4	2
16	12	6	3
32	20	8	4
64	30	10	5
128	42	12	6
256	56	14	7
512	72	16	8
1024	90	18	9
2048	110	20	10
4096	132	22	11
8192	156	24	12
16,384	182	26	13
32,768	210	28	14
65,536	240	30	15
131,072	272	32	16
262,144	306	34	17
524,288	342	36	18
1,048,576	380	38	19
2,097,152	420	40	20
4,194,304	462	42	21
8,388,608	506	44	22
16,777,216	552	46	23
33,554,432	600	48	24
67,108,864	650	50	25
134,217,728	702	52	26
268,435,456	756	54	27
536,870,912	812	56	28
1,073,741,824	870	58	29
2,147,483,648	930	60	30
4,294,967,296	992	62	31
8,589,934,592	1056	64	32
17,179,869,184	1122	66	33
34,359,738,368	1190	68	34
68,719,476,736	1260	70	35
137,438,953,472	1332	72	36
274,877,906,944	1406	74	37
549,755,813,888	1482	76	38

But

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But according to a later * writer upon the ſubject, the above table, though the numbers there may be thought ſufficient for the peopling of the earth, we could by no means depend upon, for ſeveral reaſons; particularly,

* *Cockburn upon the Deluge.*

22 Objections to Mr Whiſton's table.

1. It is laid down there as a foundation, that the Antediluvians would double themſelves every 40 years; as indeed they would, and in leſs time, after there came to be 100 marriages. Now, had the author obſerved this regular progreſſion in his computation, by adding 40 years to every former period of the age of the world, the amount, inſtead of two millions of millions, &c. would have been above five millions of millions at the year 1656, the age of the world at the deluge, according to the Hebrew numbers, which he contends for. What would the ſum then have been, had we carried on the computation for 600 years more, according to the Septuagint?

2. He ſuppoſes the period of doubling muſt have been much ſhorter in the earlieſt ages, and much longer in the later, contrary to reaſon and fact. For mankind being ſprung from one pair only, the increaſe at firſt muſt have been very ſlow, but come on very faſt when a conſiderable number were married. His table therefore is made not regularly, but according to fancy, by unequal ſtarts or chaſms, at great intervals in the latter part, where it ſhould have been moſt regular; it would ſeem with no other view than to raiſe ſuch a number, upon the whole, as might be thought ſufficient to people the earth.

3. In that calculation the two material points, the time of nurſing and the age of puberty, are quite overlooked, by which all computations of the numbers in the Antediluvian world muſt be regulated. What unavoidable miſtakes this omiſſion muſt occaſion, will be ſeen by examining the firſt ten numbers of the ſaid table.

Years of the world and intervals of doubling.	Number of increaſe according to the intervals.	
1	2	Adam and Eve.
2	4	Cain and Abel.
6	8	
12	16	
20	32	
30	64	
42	128	
56	256	
72	512	
90	1024	
110	2048	

On this table it may be obſerved, 1. That though there were but two perſons created at firſt, this computation makes four perſons in the ſecond year of the world. This could not poſſibly be, except Cain had been born within 12 months after the creation, which is highly improbable, and Abel in the ſecond year, yet far more improbable; for in that caſe Eve could not have ſuckled Cain.

2. In the ſixth year of the world we have eight perſons, that is, ſix children of Eve's in ſix years. "But (our author adds) what ſhall Eve do with ſix infants in ſix years? Where could ſhe find ſo many wet nurſes for them? Or would the mother of all living deny her children that nouriſhment which the Creator had appointed for their firſt food, the milk in her breaſts? Do they conſider that there was but one woman in the world to do for herſelf, her huſband, and her children, what belongs to women to do? We ſhould ſurely have more reſpect and compaſſion for the mother of all mankind, than to lay ſuch an intolerable burden upon her, whoſe ſorrow for her own deception, and thereby ruining both herſelf and her huſband, muſt have been very great for many years. In puniſhment of which, though God had ſaid *he would greatly multiply her ſorrow and conception*, the meaning was not, that ſhe ſhould have a child every year, which could not be, becauſe the nature of that food and nouriſhment appointed by himſelf for her children would not permit it. Nor yet when he commanded them to *increaſe and multiply and repleniſh the earth*, could the command be obeyed in ſuch a manner as was contrary to the order of nature and providence. But the method intended to anſwer the deſign of the command was to prolong their lives to above 800 and 900 years, and their prolific powers for 340 and 360 years of that term of life, that by ſlow and ſure and long continuance of increaſe they might people the earth in due time."

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3. The ſame exception lies to all the following periods of doubling, where the number far exceeds what it could poſſibly be in fact; but we ſhall paſs them over, and come to the laſt of them in the year 110, in which the number of mankind is made 2048. Now in the year 110 not one of Adam's children was married, becauſe not yet come to the age of puberty. In that year of the world there could be no more than 18 or 20 perſons, at ſingle births, beſides Adam and Eve. It is a great miſtake therefore to imagine, that the periods of doubling were much ſhorter in the earlier times than in the latter; the contrary of which is evident to reaſon.

According to our author, two errors have been fallen into in treating of this point; namely, 1. That in the *Id.* p. 81. firſt ages of the world, both before and after the Flood, men began to propagate their kind as early as they commonly do at preſent. 2. That the children of the ſame father ſucceeded one after another as faſt as they do now, that is, that the women brought forth children every year. The firſt of theſe errors he confutes, by ſhewing that the ſeveral periods or ſtages of man's life bear a juſt proportion to one another, and to the whole term of life; and that the period of puberty or maturity has not been the ſame at all times, but is according to the length or brevity of life in the different ages of the world, according to that remark of St Auguſtine, *Tanto ſerior fuit proportione puberta, quanto vitæ totius major annoſitas.* Moſes, he obſerves, gives the age of the world from the creation to the deluge, and from that period to his own time chiefly by generations. A generation is the interval of years between the births of father and ſon. This the Latins call *ævum*, and the Greeks γενεὰ. Now, a generation, or the interval of years between father and ſon, has not been, neither poſſibly could be, the ſame in all ages from the beginning, as Voſſius juſtly obſerves; but has varied greatly according to the length or brevity of man's life in the ſeveral periods of the world. Since the ordinary term of man's life has been reduced to 70 and 80 years, the time of puberty is in proportion to this brevity of life, and reckoned at 20 or 21, which is the fourth part of a life of fourſcore. The ſeveral

23 Of the age of puberty among the Antediluvians.

ſtages

Antediluvians. ſtages of human life are infancy, childhood, youth, manhood, full age, declenſion, old or decrepit age; all which commonly bear a proportion to the whole term of life. Now the bounds and limits of theſe ſeveral ſtages cannot be precisely the ſame in all, but vary in reſpect of the diſpoſition of men's bodies, their courſe of life, and alſo the places and ages in which they live. In the Antediluvian world then, when men lived to upwards of 800 and 900 years, can it be thought that they paſſed through the ſeveral ſtages of life in as ſhort time as men do now, who ſeldom exceed 80, and not one in ten arrives at that age? But if the Antediluvians arrived at puberty or manhood as ſoon as men do now, then would the ſeveral ſtages of human life have been loſt or confounded, and men would have ſtarted from childhood to manhood at once, without any due or regular intervals, contrary to the order of nature: But if, according to the preſent economy of nature, man is but a youth at 20, which is a fourth part of our term of life, we may reaſonably conclude, there would be a ſuitable proportion of years in a much longer term of life, ſince nature is conſtant and uniform in her operations. And though in ſo long a life as the Antediluvians enjoyed, the time of puberty might be a fifth or ſixth part of their term of life, yet would they be but youths at 150 or 160; which bears much the ſame proportion to the whole of their life as 20 is to that of ours.

The other is an error, he thinks, which could never have been fallen into, had it been conſidered, that every mother ſuckled her own children in thoſe early days; and indeed where could ſhe have found another to have done it for her?

Taking it for granted, then, that it was an univerſal cuſtom for women to ſuckle their children as well before as after the flood, the next queſtion is, for how long time they continued nurſes? He ſhows various inſtances, that when man's life was reduced to 130 or 140 years, the ordinary time of nurſing was two years: he thence infers, that for three or four generations after the flood, when men lived to about 400 years, the time would be ſo much longer in proportion, and would not be leſs than three or four years; and conſequently, that before the flood, when life was protracted to 800 or 900 years, it would be ſtill longer, in proportion to their longevity; ſo that five years might be the ordinary time of nurſing in the old world; and therefore that we cannot reckon leſs than ſix years between the births. For man's life being prolonged to ſo many hundred years at firſt for the more ſpeedy peopling of the earth, he came by ſlow degrees to mature age, there being a long time required to rear up a body that was to laſt near 1000 years. The intervals therefore of infancy, childhood, youth, and mature age, were ſo much longer in proportion to ours as the difference is between our term of life and theirs: and 150 or 160 years, with reſpect to their longevity, was no more in proportion than 20 is to the brevity of our life. As the Antediluvians therefore were ſo very long in growing up to mature age, he concludes, that the time of nurſing could not be ſhorter than five years, and that the diſtance between the births in a regular way muſt be ſet at ſix years.

24 Of the time allotted for nurſing in thoſe early days.

25 Diſtance between the births.

Upon the whole, he thinks it evident that there could be no ſuch ſpeedy increaſe of mankind at the beginning as is imagined; that the time of nurſing above ſpecified was no more than neceſſary for that ſtrength of conſtitution which was to laſt for 800 and 900 years; and that women who were to continue bearing children for 340 or 360 years of their life, ſhould have them but ſlowly, and at the diſtance of ſeveral years, that their ſtrength might hold out, and that they might not be overburthened with too many cares at once; and therefore, when Eve's firſt child was ſix years old, it was time enough for her to have another, and ſo on, though poſſibly ſome times twins. Antediluvians.

26 Of Cumberland's calculation of the increaſe of mankind.

Theſe points being diſcuſſed, he proceeds, 1. To compute what number upon the whole might be born into the world from the creation to near the time of the deluge; and then, 2. To ſtate the needful deductions for deaths and other deficiencies.

I. 1. How long the parents of mankind continued in paradiſe, we know not; though longer perhaps than is commonly imagined. We ſhall even ſuppoſe two or three years, in which time there was no child born, nor any attempt towards it. We ſhall allow them two or three years more to lament their fall, and the miſerable eſtate their want of faith and diſobedience had brought them to, from a moſt happy condition, and ſuppoſe Cain to be born ſix years after the creation (in which ſuppoſition few, probably, will be apt to think us too haſty), and Abel again ſix years after him, and ſo every ſixth year Eve to have had a child, the firſt ſeven, eight, or nine whereof were probably all males (the males being longer in coming to maturity than the females); and this diſtance between the births will alſo be thought a ſufficient allowance. At this rate of increaſe Adam would have in 100 years 16 children, in 200 years 32, and in 400 years 64 children; when we will ſuppoſe Eve to have left off child-bearing. Nor need the number of Adam's children be thought too great, when there are inſtances in thoſe later ages, and this ſhort period of man's life, of thoſe who have had 40 children at ſingle births by two ſucceſſive wives, and of many others who have had 20, 25, and 30, by one wife; though in ſuch caſes it is not to be ſuppoſed that the women ſuckled their children.

2. Though it is reaſonable to think that the Antediluvians, notwithſtanding their longevity, came to mature age at 150; yet, as we are not ſure that they all married ſo ſoon as they were ripe for marriage, and that the earlieſt in the genealogies is born in the 162d year of his father, who might probably be a firſt born, our author does not ſuppoſe Cain, Abel, or any of the ſucceeding children or grandchildren of Adam to have married till they were 160, but to have had children from 161 or 162 till they were of the age of 500, at the fore-named diſtance or interval between the births; though Noah we know had three ſons after he was 500, at the due intervals. And to all the Antediluvians we may allow, without fear of exceeding, 50 or 54 children in general, according to the courſe of nature, and the longevity of thoſe firſt ages of the world.

3. Let us next inquire in what number of years the men of that world might double themſelves, notwithſtanding the long intervals between the births. The increaſe indeed will be found very ſmall for the firſt 300 or 400 years, as they were late in coming to maturity; but the ſucceeding ages will ſwell the account exceedingly

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exceedingly. Let us ſuppoſe at preſent (what ſhall be proved afterwards) that in the year of the world 500, there were 200 perſons only, male and female, of full age to marry, the men at 160, the women at 120 or thereabout. The firſt or ſecond year after the marriage will probably produce 100 births from 100 couple, and every ſixth year after 100 more. At this ſlow progreſſion the 200 married perſons will, in 19 or 20 years, be increaſed to 600: ſo that the number of mankind would be trebled in 20 years, after there came 100 pair to be married. And in this manner they would increaſe and multiply every 20 years, or in that ſpace treble themſelves.

It may perhaps be objected, that though it appears that ſuch an increaſe might be at firſt from the firſt 100 marriages, yet they could not continue thus to multiply at ſuch periods; becauſe, according to the rule we have laid down, none of the iſſue of theſe 100 firſt marriages could increaſe the number of mankind till the men had attained the age of 160. It is true they could not: but then it muſt be remembered, that the firſt 100 pair are ſtill adding every ſixth year 100 more to the number of mankind, even till after the 400 born in the firſt 20 years are married, and begin a new ſtock for increaſe; ſo that when there came to be ſome hundred couples married, the increaſe and multiplication would come on very faſt, and in 1000 years mankind would be prodigiouſly increaſed.

But though there be nothing in this ſuppoſition contrary to reaſon, viz. That after the year of the world 500, they might treble themſelves in 20 years; yet we will not reckon upon ſo ſhort an interval, but will allow a much longer time even to their doubling themſelves, and ſhall exhibit two tables of doubling; the firſt at the interval of 50 years (much too long indeed), the other at the interval of 40 years, and both beginning at the year 500, when there could not be fewer (whatever more there might be) than 100 married or marriageable perſons deſcended from Adam and Eve.

Years of the World.	Number of Mankind.
500	200
550	400
600	800
650	1,600
700	3,200
750	6,400
800	12,800
850	25,600
900	51,200
950	102,400
1000	204,400
1050	409,600
1100	819,200
1150	1,638,400
1200	3,276,800
1250	6,553,600
1300	13,107,200
1350	26,214,400
1400	52,428,800
1450	104,857,600
1500	209,715,200
1550	419,430,400
1600	838,860,800
1650	1,677,721,600
1700	3,335,443,200
1750	6,710,886,500
1800	13,421,772,800
1850	26,843,545,600
1900	53,687,091,200
1950	107,374,182,400
2000	214,748,364,800
2050	429,496,729,600

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This table is calculated at the long interval of 50 years, that it may appear that even by under-rating the number of mankind, there would be ſo many millions born into the world before the deluge came, that they would be obliged to ſpread themſelves over the face of the earth, though but one half of the ſum total of 429,496 millions had been alive at the time of the deluge; but as the interval here allowed may appear to be too long for the time of doubling, the ſecond is calculated at the interval of 40 years, which comes nearer to the truth of the caſe, though even this may exceed the time of doubling.

Years of the World.	Number of Mankind.
500	200
540	400
580	800
620	1,600
660	3,200
700	6,400
740	12,800
780	25,600
820	51,200
860	102,400
920	204,800
940	409,600
980	819,200
1020	1,638,400
1060	3,276,800
1100	6,553,600
1140	13,107,200
1180	26,214,400
1220	52,428,800
1260	104,857,600
1300	209,715,200
1340	419,430,400
1380	838,860,800
1420	1,677,721,600
1460	3,355,443,200
1500	6,710,886,400
1540	13,421,772,800
1580	26,843,545,600
1620	53,687,091,200
1660	107,374,182,400
1700	214,748,364,800
1740	429,496,729,600
1780	858,993,459,200
1820	1,717,986,918,400
1860	3,435,973,836,800
1900	6,871,947,673,600
1940	13,743,895,347,200
1980	27,487,790,694,400
2020	54,975,581,388,800

The firſt table is brought down no lower than to the year 2050, and the ſecond to the year 2020, though

Antediluvians. though there remain by the firſt 206, and by the ſecond 236 years to the flood: the reaſon is, that in thoſe laſt 200 years of the world, mankind would not increaſe in any meaſure equal to what they had done in the preceding years (though regularly the increaſe ſhould have been much greater); becauſe that violence was then great in the earth, and thouſands, yea millions, might have been cut off by untimely deaths; for which cauſe the world's deſtruction was determined 120 years before the flood came.

27 Objection anſwered. II. But now againſt this immenſe number of mankind that might in a regular and ordinary way have been born into the world between the creation and the deluge in 2056 years, it will no doubt be objected by ſome (as it has been done to far leſs numbers), that all ſuch calculations are mere gueſs work, the product of fruitful imaginations.

But it ſhould be conſidered, that in calculations of this nature ſome regular order or method muſt be obſerved: and though, according to the courſe of nature ſuch an increaſe and multiplication of mankind there might have been periodically, eſpecially at the beginning, when the command was *to increaſe and multiply and replenish the earth*; yet we will not ſuppoſe that all things went on thus regularly, without difference or interruption. We do not know what extraordinary obſtructions or interruptions there might be to ſuch a regular increaſe. Though every married pair might by the courſe of nature have had ſuch a number of children as has been mentioned, yet the Divine Providence might order it otherwiſe in manifold inſtances, and it might poſſibly be in the old world, as it has been ſince the flood, viz. that ſome marriages have produced many children, others few, and ſome none at all. Allowing, therefore, for all ſuch obſtructions and deficiencies, and likewiſe for all caſualties and accidents (to which men might be liable in that world as well as in the preſent), in as ample a manner as can be deſired, let the former number be reduced to one half, viz. to 27,487,790,694,400, that is, 27 billions, or millions of millions, four hundred and eighty-ſeven thouſand ſeven hundred and ninety millions, ſix hundred and ninety-four thouſand and four hundred. And this we ſhall now ſuppoſe to be the whole number of thoſe who were born into the world before the deluge. But from this ſum is to be ſubtracted the number of thoſe who died before that time.

Of thoſe in the genealogies from Adam by Seth, Enoch was tranſlated at the age of 365, Lamech the father of Noah died juſt before the flood at 753, Mahalaleel at 895. Adam and the other five patriarchs lived to above 900. Before the year 900, therefore, we may ſuppoſe there were no deaths except that of Abel, who was ſlain, a young man, but that all born within that period were alive together. But in the tenth century death began to reign, and Adam and Eve, we may preſume, were the firſt over whom death had power in a natural way, as their diſobedience was the cauſe of it. The children alſo born of them in the firſt hundred years would alſo die in this 10th century, thoſe born in the ſecond hundred would die in the 11th, thoſe born in the third century would die in the 12th, and ſo on. But though we are far from thinking that after the beginning of the 10th century (till which time few or none died), the deaths would be equal to the births; yet as we have made large conceſſions all along, we ſhall do the ſame in this caſe, and ſuppoſe them upon the whole to have been equal, eſpecially ſince we cannot preciſely ſay how long that violence or bloodſhed, which was their crying ſin, came to prevail; and therefore will reduce the laſt ſum mentioned to one half again, to allow for the deaths and prevailing violence, and ſuppoſe the total number of mankind alive upon earth at the time of the deluge to have been no more than 13,743,895,347,200, that is, 13 billions or millions of millions, ſeven hundred and forty-three thouſand eight hundred and ninety-five millions, three hundred and forty-ſeven thouſand and two hundred; a number vaſtly exceeding that of the preſent inhabitants of the whole earth. Antediluvians.

28 Probability of the above calculation. Notwithſtanding the very large allowances and abatements made to reduce the number of mankind, yet even the laſt reduction to 13 billions or millions of millions, &c. ſeems ſo vaſtly great, that it will hardly be thought poſſible that ſuch a number of men could ever be at one time upon the earth. Now, though we pretend to no certainty in this point (which made it the more requiſite to allow largely for deaths and deficiencies), yet the calculation we have given muſt appear highly probable, ſince it is founded upon grounds certain and undeniable: for inſtance,

1. It cannot be denied but that the Antediluvians were come to the age of puberty and marriage at 160 years, when we find a ſon born in 162. Nor,

2. Can it be ſaid, that they could not have children at the age of 500, when we have an inſtance of one that had three ſons at due diſtances after that age. Neither,

3. Can it be alleged that we have not allowed a due diſtance or interval between the births, viz. ſix years, when moſt will be of opinion that it could not be ſo long. Nor yet,

4. Can it be judged that we have made the period of doubling far too ſhort, when we had before ſhowed that after 100 marriages conſummated, they would treble themſelves in half the time we have taken for their doubling. Nor,

5. Will any one make a doubt, but that there might be 200 perſons of mature age for marriage in the year of the world 500, the men at 160, the women younger. Nevertheleſs, as this is the foundation of our calculation, we ſhall now ſhow that there was at leaſt ſuch a number of perſons marriageable at that age of the world.

It may be obſerved, that as we take 160 for the year of maturity and marriage, according to that period all married or marriageable in the year 500 muſt have been born in or before the year 340; the males at leaſt, though the females, coming ſooner to maturity, might ſome of them be born later or after the year 380. Now, according to this ſtated period of marriage,

1. In or before the year 340, Adam might have had 54 children, males and females, or 27 pair married or fit for marriage.

2. Cain, whom we ſuppoſe to be but ſix years younger than Adam (which by the by is more than others allow), and to have married in the year 166, might have in the year 340, 28 children, or 14 pair fit for marriage, which added to the former, makes 41 pair.

Antediluvians || Antenati.

3. Abel, married ſix years later, that is, in the year 172, and whom we ſhall ſuppoſe ſlain in the year 225 or 226, could in that caſe have no more than eight or nine children, or four pair, which with the former make 45 pair.

4. Adam's third ſon, married in the year 178, will afford us in the year 340, 26 children, or 13 pair, which increaſe the number of marriageable perſons to 58 pair.

5. A fourth ſon of Adam's, married in the year 184, will give us in the year 340, 25 children, or 12 pair; which makes the number of pairs 70.

6. A fifth ſon of Adam's, married in the year 190, might in the year 340 have 24 children, or 12 pair again, which increaſe the former number to 82 pair.

7. A ſixth ſon of Adam's, married in the year 196, would have in the year 340, 22 children, or 11 pair; which added to the former make up 93 pair.

8. A ſeventh ſon of Adam's, married in the year 202, will, in the year 340, give us 20 children, or 10 pair; which makes in the whole 103 pair, already three pair more than we reckoned upon. I need therefore go no farther on to the eighth or ninth ſon; but the following eight or nine births I may reaſonably take to have been daughters, and married to the brothers that preceded them.

Here are now no more than 14 children of Adam's married, who have given us the 100 pair we have reckoned upon, and three over. We might yet have 13 pair to bring into the account, all born before the year 340, and marriageable in the year 500, which would very much increaſe the number of mankind. And by this the reader may perceive that we have been far from building on uncertain or precarious foundations, ſince we have omitted 13 pair more, which we might have taken into the account. And if it be conſidered that the command given to Adam was to increaſe and multiply and repleniſh the earth, no doubt can be made, but that his own and his children's marriages were fruitful in the procreation of children, that the earth might be inhabited.

ANTEGO. See ANTIGUA.

ANTEJURAMENTUM, by our anceſtors called *juramentum calumniæ*, an oath which anciently both accuſer and accuſed were to take before any trial or purgation.—The accuſer was to ſwear that he would proſecute the criminal; and the accuſed to make oath, on the day he was to undergo the ordeal, that he was innocent of the crime charged againſt him.

ANTELOPE, in *Zoology*. See CAPRA.

ANTELUCAN, in eccleſiaſtical writers, is applied to things done in the night or before day. We find frequent mention of the antelucan aſſemblies (*Cœtus antelucani*) of the ancient Chriſtians, in times of perſecution, for religious worſhip.

ANTEMURALE, in the ancient military art, denotes much the ſame with what the moderns call an *outwork*.

ANTENATI, in modern Engliſh hiſtory, is chiefly underſtood of the ſubjects of Scotland, born before King James the Firſt's acceſſion to the Engliſh crown, and alive after it. In relation to theſe, thoſe who were born after the acceſſion were denominated *Poſtnati*. The antenati were conſidered as aliens in England, whereas the poſtnati claimed the privilege of natural ſubjects.

Antenclema || Antefature.

ANTENCLEMA, in *Oratory*, is where the whole defence of the perſon accuſed turns on criminating the accuſer. Such is the defence of Oreſtes, or the oration for Milo: *Occiſus eſt, ſed latro. Exſectus, ſed raptor.*

ANTENICENE, in eccleſiaſtical writers, denotes a thing or perſon prior to the firſt council of Nice. We ſay the Antenicene faith, Antenicene creeds, Antenicene fathers.

ANTENNÆ, in the hiſtory of inſects, ſlender bodies with which nature has furniſhed the heads of theſe creatures, being the ſame with what in Engliſh are called *horns* or *feelers*. See ENTOMOLOGY *Index*.

ANTENOR, a Trojan prince, came into Italy, expelled the Enganians on the river Po, and built the city of Padua, where his tomb is ſaid to be ſtill extant.

ANTEPAGMENTA, in the *Ancient Architecture*, the jambs of a door. They are alſo ornaments, or garniſhings, in carved work, of men, animals, &c. made either of wood or ſtone, and ſet on the architrave.

ANTEPENULTIMA, in *Grammar*, the third ſyllable of a word from the end, or the laſt ſyllable but two.

ANTEPILANI, in the Roman armies, a name given to the haſtati and principes, becauſe they marched next before the triarii, who were called *pilani*.

ANTEPILEPTICS, among phyſicians, medicines eſteemed good in the epilepſy.

ANTEPOSITION, a grammatical figure, whereby a word, which by the ordinary rules of ſyntax ought to follow another, comes before it. As when, in the Latin, the adjective is put before the ſubſtantive, the verb before the nominative caſe, &c.

ANTEPREDICAMENTS, among logicians, certain preliminary queſtions which illuſtrate the doctrine of predicaments and categories.

ANTEQUIERA, a handſome town of Spain, in the kingdom of Granada, divided into two parts, the upper and lower. The upper is ſeated on a hill, and has a caſtle: the lower ſtands in a fertile plain, and is watered with a great number of brooks. There is a large quantity of ſalt in the mountain; and five miles from the town, a ſpring famous for the cure of the gravel. W. Long. 4. 40. N. Lat. 36. 51.

ANTERIOR, denotes ſomething placed before another, either with reſpect to time or place.

ANTEROS, in *Mythology*, one of the two Cupids who were the chief of the number. They are placed at the foot of the Venus of Medicis; this is repreſented with a heavy and ſullen look, agreeably to the poetical deſcription of him, as the cauſe of love's ceaſing. The other was called Eros.

ANTESIGNANI, in the Roman armies, ſoldiers placed before the ſtandards, in order to defend them, according to Lipſius; but Cæſar and Livy mention the anteſignani as the firſt line, or firſt body, of heavy-armed troops. The velites, who uſed to ſkirmiſh before the army, were likewiſe called *anteſignani*.

ANTESTATURE, in *Fortification*, a ſmall retrenchment

Anteſtari || Antheſteria.

trenchment made of paliſadoes, or ſacks of earth, with a view to diſpute with an enemy the remainder of a piece of ground.

ANTESTARI, in *Roman Antiquity*, ſignifies to bear witneſs againſt any one who refuſed to make his appearance in the Roman courts of judicature, on the day appointed, and according to the tenor of his bail. The plaintiff, finding the defendant after ſuch a breach of his engagement, was allowed to carry him into court by force, having firſt aſked any of the perſons preſent to bear witneſs. The perſon aſked to bear witneſs in this caſe, expreſſed his conſent by turning his right ear, which was inſtantly taken hold of by the plaintiff, and this was to anſwer the end of a ſubpœna. The ear was touched upon this occaſion, ſays Pliny, as being the ſeat of memory, and therefore the ceremony was a ſort of caution to the party to remember his engagement.

ANTHELION. See CORONA and PARHELION.

ANTHELIX, in *Anatomy*, the inward or ſuperior protuberance of the external ear, being a ſemicircle within, and almoſt parallel to the helix. See ANATOMY.

ANTHELMINTICS, among *Phyſicians*, medicines proper to deſtroy worms.

ANTHEM, a church ſong performed in cathedral ſervice by choriſters, who ſung alternately. It was uſed to denote both pſalms and hymns, when performed in this manner. But, at preſent, anthem is uſed in a more confined ſenſe, being applied to certain paſſages taken out of the ſcriptures, and adapted to a particular ſolemnity. Anthems were firſt introduced in the reformed ſervice of the Engliſh church, in the beginning of the reign of Queen Elizabeth.

ANTHEMIS, CHAMOMILE. See BOTANY *Index*.

ANTHERA, in *Botany*, that part of the ſtamen which is fixed on the top of the filamentum, within the corolla: it contains the pollen or fine duſt, which, when mature, it emits for the impregnation of the plant, according to Linnæus. The APEX of Ray, Tournef. and Rivin.; *Capſula ſtaminis*, of Malpighi.

ANTHERICUM, SPIDER-WORT. See BOTANY *Index*.

ANTHESPHORIA, in *Antiquity*, a Sicilian feſtival inſtituted in honour of Proſerpine. The word is derived from the Greek ἄνθος, *flower*, and φέρω, *I carry*; becauſe that goddeſs was forced away by Pluto when ſhe was gathering flowers in the fields. Yet Feſtus does not aſcribe the feaſt to Proſerpine; but ſays it was thus called by reaſon ears of corn were carried on this day to the temples.—Antheſphoria ſeems to be the ſame thing with the *floriferium* of the Latins, and anſwers to the harveſt-home among us.

ANTHESTERIA, in *Antiquity*, was a feaſt celebrated by the Athenians in honour of Bacchus. The moſt natural derivation of the word is from the Greek ἄνθος (*flos*), a flower, it being the cuſtom at this feaſt to offer garlands of flowers to Bacchus.

The antheſteria laſted three days, the 11th, 12th, and 13th of the month; each of which had a name ſuited to the proper office of the day. The firſt day of the feaſt was called πιθοιγία, i. e. *opening of the veſſels*, becauſe on this day they tapped the veſſels, and taſted the wine. The ſecond day they called χόες, *congii*, the name of a meaſure containing the weight of 10 pounds; on this they drank the wine prepared the day before. The third day they called χύτροι *kettles*, on this day they boiled all ſorts of pulſe in kettles; and though ever they were not allowed to taſte, as being offered to Mercury.

Antheſteria || Anthracites.

ANTHESTERION, in *Ancient Chronology*, the ſixth month of the Athenian year. It contained 29 days; and anſwered to the latter part of our February and beginning of December. The Macedonians called it *dæſius* or *deſius*. It had its name from the feſtival antheſteria kept in it.

ANTHISTERIA. See BOTANY *Index*.

ANTHOCEROS, or HORN-FLOWER. See BOTANY *Index*.

ANTHOLOGION, the title of the Greek book uſed in the Greek church. It is divided into 12 months, containing the offices ſung throughout the year, on the feſtivals of our Saviour, the Virgin, and other remarkable ſaints.

ANTHOLOGY, a diſcourſe of flowers, or of beautiful paſſages from any authors.—It is alſo the name given to a collection of epigrams taken from ſeveral Greek poets.

ANTHOLYZA, MAD FLOWER. See BOTANY *Index*.

ANTHONY, SAINT, was born in Egypt in 251, and inherited a large fortune, which he diſtributed among his neighbours and the poor, retired into ſolitude, founded a religious order, built many monaſteries, and died *anno* 356. Many ridiculous ſtories are told of his conflicts with the devil, and of his miracles. There are ſeven epiſtles extant attributed to him.

St Anthony is ſometimes repreſented with a fire by his ſide, ſignifying that he relieves perſons from the inflammation called after his name; but always accompanied by a hog, on account of his having been a ſwineherd, and curing all diſorders in that animal. To do him the greater honour, the Romaniſts in ſeveral places keep at common charges a hog denominated *St Anthony's hog*, for which they have great veneration. Some will have St Anthony's picture on the walls of their houſes, hoping by that to be preſerved from the plague; and the Italians, who do not know the true ſignification of the fire painted at the ſide of their ſaint, concluding that he preſerves houſes from being burnt, invoke him on ſuch occaſions. Both painters and poets have made very free with this ſaint and his followers: the former by the many ludicrous pictures of his temptation; and the latter, by divers epigrams on his diſciples or friars: one of which is the following, printed in Stephen's World of Wonders:

Once fedd'ſt thou, Anthony, an herd of ſwine,
And now an herd of monks thou feedeſt ſtill.
For wit and gut alike both charges bin;
Both loven filth alike; both like to fill
Their greedy paunch alike: nor was that kind
More beaſtly, ſottiſh, ſwiniſh, than this laſt.
All elſe agrees: one fault I only find,
Thou feedeſt not thy monks with oaken maſt.

ANTHONY or *Knights of St Anthony*, a military order, inſtituted by Albert duke of Bavaria, Holland, and Zealand, when he deſigned to make war againſt the Turks in 1382. The knights wore a collar of gold.

St Anthony gold made in form of a hermit's girdle, from which hung a ſtick cut like a crutch, with a little bell, as they are repreſented in St Anthony's pictures.

Anthropolatria.

St Anthony alſo gives the denomination to an order of religious founded in France about the year 1095, to take care of thoſe afflicted with St Anthony's fire; (ſee the next article.)—It is ſaid, that, in ſome places, theſe monks aſſume to themſelves a power of giving, as well as removing, the *ignis ſacer*, or eryſipelas; a power which ſtands them in great ſtead for keeping the poor people in ſubjection, and extorting alms. To avoid the menaces of theſe monks, the country people preſent them every year with a fat hog a piece. Some prelates endeavoured to perſuade Pope Paul III. to aboliſh the order; *quæſtuarios iſtos ſancti Anthonii, qui decipiunt ruſticos et ſimplices, eoſque innumeris ſuperſtitionibus implicent, de medio tollendos eſſe*. But they ſubſiſt, notwithſtanding, to this day, in ſeveral places.

St Anthony's Fire, a name properly given to the eryſipelas. Apparently it took this denomination, as thoſe afflicted with it made their peculiar application to St Anthony of Padua for a cure. It is known, that anciently particular diſeaſes had their peculiar ſaints: thus, in the ophthalmia, perſons had recourſe to St Lucia; in the toothach, to St Apollonia; in the hydrophobia, to St Hubert, &c.

ANTHORA, in *Botany*, the trivial name of a ſpecies of aconitum. See ACONITUM, BOTANY *Index*.

ANTHORISMUS, in *Rhetoric*, denotes a contrary deſcription or definition of a thing from that given by the adverſe party.—Thus, if the plaintiff urge, that to take any thing away from another without his knowledge or conſent, is a theft; this is called ὅρος, or definition. If the defendant reply, that to take a thing away from another without his knowledge or conſent, provided it be done with deſign to return it to him again, is not theft; this is an Ἀνθορισμος.

ANTHOSPERMUM, the AMBER TREE. See BOTANY *Index*.

ANTHOXANTHUM, or VERNAL GRASS. See BOTANY *Index*.

ANTHRACIS, ANTHRACIAS, or ANTHRACITIS, names promiſcuouſly uſed by ancient naturaliſts for very different foſſils, viz. the carbuncle, hæmatites, and a kind of aſteria. See CARBUNCLE, &c.

ANTHRACOCIS, in *Medicine*, a corroſive ſcaly ulcer either in the bulb of the eye or the eyelids.

ANTHRAX, a Greek term, literally ſignifying a burning coal, uſed by the ancients to denote a gem, as well as a diſeaſe, more generally known by the name of *carbuncle*.

ANTHRAX is ſometimes alſo uſed for lithanthrax or pit coal.

ANTHROPOGLOTTUS, among *Zoologiſts*, an appellation given to ſuch animals as have tongues reſembling that of mankind, particularly to the parrot kind.

ANTHROPOGRAPHY, denotes the deſcription of the human body, its parts, ſtructure, &c. See ANATOMY.

ANTHROPOLATRÆ, in *Church Hiſtory*, an appellation given to the Neſtorians, on account of their worſhipping Chriſt, notwithſtanding that they believed him to be a mere man.

ANTHROPOLATRIA, the paying divine honours to a man; ſuppoſed to be the moſt ancient kind of idolatry.

Anthropolites.

ANTHROPOLITES, a term denoting petrifactions of the human body, as thoſe of quadrupeds are called *zoolites*.

It has been doubted whether any real human petrifactions ever occur, and whether thoſe which have been ſuppoſed ſuch were not mere *luſus naturæ*. But the generality of naturaliſts beſt verſed in this branch aſſure us of real anthropolites being ſometimes found. And indeed, as it is univerſally admitted that the zoolites are frequently ſeen, what negative argument therefore can be brought againſt the exiſtence of the others? Are not the component parts of the human body nearly ſimilar to thoſe of the brute creation? Conſequently, correſpondent matter may be ſubject to, and acquire, the like accidental changes, wherever the ſame power or cauſes concur to act upon either object. If the former are not ſo common, it may be accounted for, in ſome meaſure, by reflecting that human bodies are generally depoſited in ſelect and appropriated places; whereas the bones of animals are diſperſed everywhere, and falling into various beds of earth, at a greater or leſs depth, there is more probability of their encountering the petrifying agent. Could we credit ſome authors who have treated on this ſubject, they will tell us of entire bodies and ſkeletons that were found petrified. One in particular, diſcovered at Aix in Provence *anno* 1583, in a rocky cliff, the cerebrum whereof, when ſtruck againſt a piece of ſteel, produced ſparks, the bones being at the ſame time friable. The reports of Happel and Kircher are too abſurd for belief. Van Helmont's ſtrange relations, together with thoſe of Jean à Coſta, muſt alſo be rejected as fabulous. Scheuhzer has publiſhed an engraved figure, which he calls the *Antediluvian man*: how far it is authentic, it would be raſh to ſay. It is, however, aſſerted by many reſpectable writers on natural hiſtory, that whole ſkeletons petrified have been brought to light from certain old mines, which remained cloſed up and diſuſed for ſeveral centuries. Theſe indeed are acknowledged to be very rare. Yet it is a known fact, that detached parts (*oſteolithi*) are ſometimes found, eſpecially in ſituations where either the water, the ſoil, or both, have been obſerved to poſſeſs a ſtrong petreſcent quality. The human vertebræ, fragments or portions of the tibia, and even the whole cranium itſelf, have been ſeen in an abſolute ſtate of petrifaction. Some of theſe are ſaid to appear vitriolated or mineralized. As to the petrified bones of pretended giants, they are more probably real zoolites, the bones of the larger animals. All theſe bones are found in various ſtates, and under different appearances. Some are only indurated; others calcined, vitriolated, or mineralized; ſome, again, are ſimply incruſted; whilſt others have been proved completely petrified. Notwithſtanding what is here advanced, it may be granted that a poſitive *luſus naturæ*, in ſome hands, is repeatedly miſtaken for a real petrifaction. They are, however, diſtinguiſhable at all times by an experienced naturaliſt; particularly by the two following rules: Firſt, We may determine that foſſil a *luſus naturæ* which, on a ſtrict examination, is obſerved to deviate in any material degree from the true *res analogica exiſtens*. Secondly, By the ſame parity of reaſoning, theſe foſſil

Anthropology || Anthropophagi

shells are to be esteemed certain petrifications, and genuine Antediluvian *reliquiæ*, in which, on a comparison with their *analogues*, collected from the sea, there appears an exact conformity in size and figure. This comparative observation will hold good for all fossils; that is, such as present themselves either under the animal or vegetable form. It is nevertheless worthy of notice, that all testaceous fossils are not petrified; since some kinds of them have been found in beds of sand, which retained their original perfect shape and quality, but at the same time they proved very brittle, indeed scarcely bearing the most gentle touch. Shells of this description are always dissoluble by acids, in contradistinction to the petrified or calcareous fossil shells, whose property it is to resist the action of such like *menstrua*. See further the article PETRIFACTION.

ANTHROPOLOGY, a discourse upon human nature.

ANTHROPOLOGY, among *Divines*, denotes that manner of expression, by which the inspired writers attribute human parts and passions to God.

ANTHROPOMANCY, a species of divination, performed by inspecting the entrails of a human creature.

ANTHROPOMORPHA, a term formerly given to the primates of that class of animals which have the greatest resemblance to the human kind.

ANTHROPOMORPHISM, among *Ecclesiastical Writers*, denotes the heresy or error of the Anthropomorphites. See the next article.

ANTHROPOMORPHITES, in *Church History*, a sect of ancient heretics, who, taking every thing spoken of God in Scripture in a literal sense, particularly that passage of Genesis in which it is said *God made man after his own image*, maintained that God had a human shape. They are likewise called *Audeans*, from Audeus their leader.

ANTHROPOMORPHOUS, something that bears the figure or resemblance of a man. Naturalists give instances of anthropomorphous plants, anthropomorphous minerals, &c. These generally come under the class of what they call *lusus naturæ*, or monsters.

ANTHROPOPATHY, a figure or expression by which some passion is ascribed to God, which properly belongs only to man.

ANTHROPOPHAGI, (of ἄνθρωπος, a *man*, and φαγω, to *eat*, MEN-EATERS.) That there have been, in almost all ages of the world, nations who have followed this barbarous practice, we have abundance of testimonies.

The Cyclops, the Lestrygons, and Scylla, are all represented in Homer, as *Anthropophagi*, or man-eaters; and the female phantoms, Circe, and the Sirens, first bewitched with a show of pleasure, and then destroyed. This, like the other parts of Homer's poetry, had a foundation in the manners of the times preceding his own. It was still, in many places, the age spoken of by Orpheus,

> When men devour'd each other like the beasts,
> Gorging on human flesh.——

According to Herodotus, among the Essedonian Scythians, when a man's father died, the neighbours brought several beasts, which they killed, mixed up their flesh with that of the deceased, and made a feast. Among the Massagetæ [illegible] they killed him and ate his flesh; but if he died of sickness, they buried him, esteeming him unhappy. The same author also assures us, that several nations in the Indies killed all their old people and their sick, to feed on their flesh: he adds, that persons in health were sometimes accused of being sick, to afford a pretence for devouring them. According to these impious, the first laws that were made, were for the preventing of this barbarous practice, which the Greek writers represent as universal before the time of Orpheus.

Of the practice of anthropophagy in later times, we have the testimonies of all the Romish missionaries who have visited the internal parts of Africa, and even some parts of Asia. Herrera speaks of great markets in China, furnished wholly with human flesh, for the better sort of people. Marcus Paulus speaks of the like in his time, in the kingdom of Concha towards Quinsay, and the island of Zapengit; others, of the great Java; Barbosa, of the kingdom of Siam and island of Sumatra; others, of the islands in the gulf of Bengal, of the country of the Samogitians, &c.

The philosophers Diogenes, Chrysippus, and Zeno, followed by the whole sect of Stoics, affirmed, that there was nothing unnatural in the eating of human flesh; and that it was very reasonable to use dead bodies for food, rather than to give them a prey to worms and putrefaction. In order to make the trial, however, whether there was any real repugnancy in nature to the feeding of an animal with the flesh of its own species, Leonardus Floroventius fed a hog with hog's flesh, and a dog with dog's flesh: upon which he found the bristles of the hog to fall off, and the dog to become full of ulcers.

When America was discovered, this practice was found to be almost universal, insomuch that several authors have supposed it to be occasioned through a want of other food, or through the indolence of the people to seek for it; though others ascribe its origin to a spirit of revenge.

It appears pretty certain from Dr Hawkesworth's account of the Voyages to the South Seas, that the inhabitants of the island of New Zealand, a country unfurnished with the necessaries of life, eat the bodies of their enemies. It appears also to be very probable, that both the wars and anthropophagy of these savages, take their rise and owe their continuance to irresistible necessity, and the dreadful alternative of destroying each other by violence, or of perishing by hunger. See vol. iii. p. 447. et seq. and vol. ii. p. 389, &c.

Mr Marsden also informs us, that this horrible custom is practised by the Battas, a people in the island of Sumatra. "They do not eat human flesh (says he) as a means of satisfying the cravings of nature, owing to a deficiency of other food; nor is it sought after as a gluttonous delicacy, as it would seem among the New Zealanders. The Battas eat it as a species of ceremony; as a mode of showing their detestation of crimes, by an ignominious punishment; and as a horrid indication of revenge and insult to their unfortunate enemies. The objects of this barbarous repast are the prisoners taken in war, and offenders convicted and condemned for capital crimes. Persons of the former

Anthropophagia. Anthroposcopia. Anthropothysia.

former deſcription may be ranſomed or exchanged, for which they often wait a conſiderable time; and the latter ſuffer only when their friends cannot redeem them by the cuſtomary fine of twenty beenchangs, or eighty dollars. Theſe are tried by the people of the tribe where the fact was committed, but cannot be executed till their own particular raja or chief has been acquainted with the ſentence; who, when he acknowledges the juſtice of the intended puniſhment, ſends a cloth to cover the delinquent's head, together with a large diſh of ſalt and lemons. The unhappy object, whether priſoner of war or malefactor, is then tied to a ſtake: the people aſſembled throw their lances at him from a certain diſtance; and when mortally wounded, they run up to him, as if in a tranſport of paſſion; cut pieces from the body with their knives; dip them in the diſh of ſalt and lemon juice; ſlightly broil them over a fire prepared for the purpoſe; and ſwallow the morſels with a degree of ſavage enthuſiaſm. Sometimes (I preſume according to the degree of their animoſity and reſentment) the whole is devoured; and inſtances have been known, where, with barbarity ſtill aggravated, they tear the fleſh from the carcaſs with their mouths. To ſuch a depth of depravity may man be plunged, when neither religion nor philoſophy enlighten his ſteps! All that can be ſaid in extenuation of the horror of this diabolical ceremony is, that no view appears to be entertained of torturing the ſufferers; of increaſing or lengthening out the pangs of death; the whole fury is directed againſt the corſe, warm indeed with the remains of life, but paſt the ſenſation of pain. I have found a difference of opinion in regard to their eating the bodies of their enemies ſlain in battle. Some perſons long reſident there, and acquainted with their proceedings, aſſert that it is not cuſtomary; but as one or two particular inſtances have been given by other people, it is juſt to conclude, that it ſometimes takes place, though not generally. It was ſuppoſed to be with this intent, that Raja Neabin maintained a long conflict for the body of Mr Nairne, a moſt reſpectable gentleman and valuable ſervant of the India Company, who fell in an attack upon the campong of that chief, in the year 1775.

It may be ſaid, that whether the dead body of an enemy be eaten or buried, is a matter perfectly indifferent. But whatever the practice of eating human fleſh may be in itſelf, it certainly is relatively, and in its conſequences, moſt pernicious. It manifeſtly tends to eradicate a principle, which is the chief ſecurity of human life, and more frequently reſtrains the hand of the murderer, than the ſenſe of duty or the dread of puniſhment. Even if this horrid practice originates from hunger, ſtill it muſt be perpetuated from revenge. Death muſt loſe much of its horror among thoſe who are accuſtomed to eat the dead; and where there is little horror at the ſight of death, there muſt be leſs repugnance to murder. See ſome further obſervations on this ſubject, equally juſt and ingenious, by Dr Hawkeſworth, *ut ſupra*.

ANTHROPOPHAGIA, the act or habit of eating human fleſh. This is pretended by ſome to be the effect of a diſeaſe, which leads people affected with it to eat every thing alike. Some chooſe only to conſider it as a ſpecies of Pica. The annals of Milan furniſh us with an inſtance of anthropophagy. A Milaneſe woman named Elizabeth, from a depraved appetite, like what women with child, and thoſe whoſe menſes are obſtructed, frequently experience, had an invincible inclination to human fleſh, of which ſhe made proviſion by enticing children into her houſe, where ſhe killed and ſalted them; a diſcovery of which having been made, ſhe was broken on the wheel and burnt in 1519. Anthropoſcopia ‖ Antichriſt.

ANTHROPOSCOPIA, from ἀνθρωπος, and σκοπεω, *I conſider*, the art of judging or diſcovering a man's character, diſpoſition, paſſions, and inclinations, from the lineaments of his body. In which ſenſe, anthropoſcopia ſeems of ſomewhat greater extent than phyſiognomy or metopoſcopy. Otto has publiſhed an Anthropoſcopia, *ſive judicium hominis de homine ex lineamentis externis*.

ANTHROPOTHYSIA, the inhuman practice of offering human ſacrifices. See SACRIFICE.

ANTHUS, in *Ornithology*, a ſynonyme of a ſpecies of loxia. See LOXIA, ORNITHOLOGY *Index*.

ANTHYLLIS, KIDNEY-VETCH. See BOTANY *Index*.

ANTHYPOPHORA, in *Rhetoric*, a figure of ſpeech; being the counterpart of an hypophora. See HYPOPHORA.

ANTI, a Greek prepoſition, which enters into the compoſition of ſeveral words, both Latin, French, and Engliſh, in different ſenſes. Sometimes it ſignifies *before*, as an anti-chamber; and ſometimes *oppoſite* or *contrary*, as in the names of theſe medicines, anti-ſcorbutic, anti-venereal.

ANTI, in matters of literature, is a title given to divers pieces written by way of anſwer to others, whoſe names are uſually annexed to the anti. See the *Anti* of M. Baillet; and the *Anti-Baillet* of M. Menage: there are alſo *Anti-Menagiani*, &c. Cæſar the dictator wrote two books by way of anſwer to what had been objected to him by Cato, which he called *Anti-Catones*; theſe are mentioned by Juvenal, Cicero, &c. Vives aſſures us, he had ſeen Cæſar's *Anti-Catones* in an ancient library.

ANTIBACCHIUS, in ancient poetry, a foot conſiſting of three ſyllables, the two firſt long, and the laſt one ſhort; ſuch is the word āmārĕ.

ANTIBES, a ſea-port town of Provence in France, with a ſtrong caſtle. Its territory produces excellent fruit; and the town ſtands oppoſite to Nice, in the Mediterranean. E. Long. 7. 9. N. Lat. 45. 50.

ANTICHAMBER, an outer chamber for ſtrangers to wait in, till the perſon to be ſpoken with is at leiſure.

ANTICHORUS, in *Botany*. See BOTANY *Index*.

ANTICHRIST, among eccleſiaſtical writers, denotes a great adverſary of Chriſtianity, who is to appear upon the earth towards the end of the world.

We have demonſtrations, diſputations, and proofs, in great order and number, both that the pope is, and that he is not, Antichriſt.

F. Calmet is very large in deſcribing the father and mother of Antichriſt, his tribe and pedigree, his wars and conqueſts, his achievements againſt Gog, Magog, &c.

Some place his capital at Conſtantinople, others at Jeruſalem, others at Moſcow, and ſome few at London; but the generality at Rome, though theſe laſt are divided.

Antichriſt. vided. Grotius and ſome others ſuppoſe Rome Pagan to have been the ſeat of Antichriſt: moſt of the Lutheran and reformed doctors contend earneſtly for Rome Chriſtian under the papal hierarchy. In fact, the point having been maturely debated at the council of Gap, held in 1603, a reſolution was taken thereupon, to inſert an article in the Confeſſion of Faith, whereby the pope is formally declared to be Antichriſt.—Pope Clement VIII. was ſtung to the quick with this deciſion; and even King Henry IV. of France was not a little mortified, to be thus declared, as he ſaid, an imp of Antichriſt.

M. le Clerc holds, that the rebel Jews and their leader Simon, whoſe hiſtory is given by Joſephus, are to be reputed as the true Antichriſt. Lightfoot and Vanderhart rather apply this character to the Jewiſh Sanhedrim. Hippolitus and others held that the devil himſelf was the true Antichriſt; that he was to be incarnate, and make his appearance in human ſhape before the conſummation of all things. Others among the ancients held that Antichriſt was to be born of a virgin by ſome prolific power imparted to her by the devil. A modern writer * of the female ſex, whom many hold for a ſaint, has improved on this ſentiment; maintaining that Antichriſt is to be begotten by the devil on the body of a witch by means of the ſemen of a man caught in the commiſſion of a certain crime, and conveyed, &c.

* Bayle's Dictionary, voce *Bourignon.*

Hunnius and ſome others, to ſecure Antichriſt to the pope (notwithſtanding that this latter ſeemed excluded by not being of the tribe of Dan), have broke in upon the unity of Antichriſt, and aſſert that there is to be both an eaſtern and a weſtern Antichriſt.

Father Malvenda, a Jeſuit, hath publiſhed a large work entitled *Antichriſto*, in which this ſubject is amply diſcuſſed. It conſiſts of thirteen books. In the firſt he relates all the opinions of the fathers with regard to Antichriſt. In the ſecond, he ſpeaks of the times when he ſhall appear; and ſhows, that all the fathers who ſuppoſed Antichriſt to be near at hand, judged the world was near its period. In the third, he diſcourſes of his origin and nation; and ſhows that he is to be a Jew, of the tribe of Dan: this he founds on the authority of the fathers; on the paſſage in Geneſis xlix. 17. *Dan ſhall be a ſerpent by the way*, &c.; on that of Jeremiah viii. 16. where it is ſaid, *The armies of Dan ſhall devour the earth;* and on Rev. vii. where St John, enumerating all the tribes of Iſrael, makes no mention of that of Dan. In the fourth and fifth books he treats of the ſigns of Antichriſt. In the ſixth of his reign and wars. In the ſeventh, of his vices. In the eighth, of his doctrine and miracles. In the ninth, of his perſecutions: and in the reſt, of the coming of Enoch and Elias, the converſion of the Jews, the reign of Jeſus Chriſt, and the death of Antichriſt, after he has reigned three years and a half. See alſo *Lowman on the Revelation.*

How endleſs are conjectures! Some of the Jews, we are told, actually took Cromwell for the Chriſt; while ſome others have laboured to prove him Antichriſt himſelf. Pfaffius aſſures us he ſaw a folio book in the Bodleian library, written on purpoſe to demonſtrate this latter poſition.

Upon the whole, the Antichriſt mentioned by the apoſtle John, 1 Ep. ii. 18. and more particularly deſcribed in the book of Revelation, ſeems evidently to be the ſame with the *Man of Sin*, &c. characterized by St Paul in his Second Epiſtle to the Theſſalonians, ch. ii. And the entire deſcription literally applies to the exceſſes of papal power. Had the right of private judgment, ſays an excellent writer, been always adopted and maintained, Antichriſt could never have been; and when that ſacred right comes to be univerſally aſſerted, and men follow the voice of their own reaſon and conſciences, Antichriſt can be no more.

ANTICHRISTIANISM, a ſtate or quality in perſons or principles, which denominates them antichriſtian, or oppoſite to the kingdom of Chriſt.

M. Jurieu takes the idea of the unity of the church to have been the ſource of *Antichriſtianiſm*. Had not mankind been infatuated with this, they would never have ſtood in ſuch awe of the anathemas of Rome. It is on this the popes erected their monarchical power.

ANTICHRISTIANS, properly denote the followers or worſhippers of Antichriſt.

ANTICHRISTIANS are more particularly underſtood of thoſe who ſet up or believe a falſe Chriſt or Meſſiah.

ANTICHTHONES, in *Ancient Geography*, an appellation given to the inhabitants of oppoſite hemiſpheres.

ANTICOR, or ANTICOEUR, among *Farriers*, an inflammation in a horſe's throat, being the ſame with the quinſy in mankind. See FARRIERY.

ANTICOSTE, a barren iſland lying in the mouth of the river St Lawrence, in North America. W. Long. 64. 16. N. Lat. from 49. to 53.

ANTICYRA, in *Ancient Geography*, a town in Phocis, on the Corinthian bay, oppoſite to Cirrha, lying to the weſt on the ſame bay. The Phoceans ſeizing the temple of Apollo at Delphi, a war, called *the ſacred*, commenced, and laſted ten years; when Philip, father of Alexander the Great, avenged the god by deſtroying many of the cities of the pillagers. Anticyra was one of the number. It was again taken and ſubverted by Attilius a Roman general in the war with the Macedonians. It afterwards became famous for its hellebore. That drug was the root of a plant, the chief produce of the rocky mountains above the city, and of two kinds, the black, which had a purgative quality; and the white, which was an emetic. Sick perſons reſorted to Anticyra to take the medicine, which was prepared there by a peculiar and very excellent recipe: Hence the adage, *Naviget Anticyram*, (Horace). By the port in the ſecond century was a temple of Neptune, not large, built with ſelected ſtones, and the inſide white-waſhed: the ſtatue of braſs. The agora or market-place was adorned with images of the ſame metal; and above it was a well with a ſpring, ſheltered from the ſun by a roof ſupported by columns. A little higher was a monument formed with ſuch ſtones as occurred, and deſigned, it was ſaid, for the ſons of Iphitus. One of theſe, Schedius, was killed by Hector, while fighting for the body of Patroclus, but his bones were tranſported to Anticyra; where his brother died after his return from Troy. About two ſtadia or a quarter of a mile diſtant was a high rock, a portion of the mountain, on which a temple of Diana ſtood; the image bigger than a large woman, and made

Antidesma || Antigonea.

by Praxiteles. The walls and other edifices at Antigyra were probably erected, like the temple of Neptune, with ſtones or pebbles. The ſite is now called *Aſpropiſpitia*, or *The White Houſes*; and ſome traces of the buildings from which it was ſo named remain. The port is landlocked, and requented by veſſels for corn. Some paces up from the ſea is a fountain.

ANTIDESMA, Chinese Laurel. See Botany *Index*.

ANTIDICOMARIANITES, ancient heretics who pretended that the Holy Virgin did not preſerve a perpetual virginity, but that ſhe had ſeveral children by Joſeph after our Saviour's birth. Their opinion was grounded on ſome expreſſions of our Saviour, wherein he mentions his brothers and his ſiſters; and of St Matthew, where he ſays, that Joſeph knew not Mary till ſhe had brought forth her firſt born ſon. The Antidicomarianites were the diſciples of Helvidius and Jovinian, who appeared in Rome toward the cloſe of the fourth century.

ANTIDORON, in *Eccleſiaſtical Writers*, a name given by the Greeks to the conſecrated bread, out of which the middle part, marked with the croſs, wherein the conſecration reſides, being taken away by the prieſt, the remainder is diſtributed after maſs to the poor. On the ſides of the antidoron are impreſſed the words *Jeſus Chriſtus vicit*. The word is formed from δοῤον, *donum*, "a gift," as being given away *loco muneris*, or in charity. The antidoron is alſo called *panis præſanctificatus*. Some ſuppoſed the antidoron to be diſtributed in lieu of the ſacrament, to ſuch as were prevented from attending in perſon at the celebration; and thence derive the origin of the word, the euchariſt being denominated *doron*, "gift," by way of eminence.

ANTIDOSIS, in *Antiquity*, denotes an exchange of eſtates, practiſed by the Greeks on certain occaſions with peculiar ceremonies, and firſt inſtituted by Solon.

When a perſon was nominated to an office, the expence of which he was not able to ſupport, he had recourſe to the antidoſis: that is, he was to ſeek ſome other citizen of better ſubſtance than himſelf, who was free from this, and other offices; in which caſe the former was excuſed. In caſe the perſon thus ſubſtituted denied himſelf to be the richeſt, they were to exchange eſtates, after this manner; the doors of their houſes were cloſe ſhut up and ſealed, that nothing might be conveyed away; then both took an oath to make a faithful diſcovery of all their effects, except what lay in the ſilver mines, which by the laws was excuſed from all impoſts; accordingly, within three days, a full diſcovery and exchange of eſtates was made.

ANTIDOTE, among *Phyſicians*, a remedy taken to prevent, or to cure, the effects of poiſon, &c.

ANTIENT. See Ancient

ANTIGONEA, or Antigonia, in *Ancient Geography*, a town of Bithynia, ſo called from Antigonus, the ſon of Philip, and afterwards called *Nicæa* (Strabo, Stephanus). Another of Epirus, to the north of the Montes Ceraunii, oppoſite to the city of Oricum (Polybius, Ptolemy). A third of Arcadia, namely *Mantinea*, ſo called in honour of King Antigonus. (Plutarch, Pauſanias.) A fourth in Macedonia, in the territory of Mygdonia (Pliny, Ptolemy). A fifth in the territory of Chalcidice, in Macedonia, on the eaſt ſide of the Sinus Thermaicus (Livy). A ſixth of Syria, built by Antigonus, not far from Antioch, on the Orontes (Stephanus); but ſoon after deſtroyed by Seleucus, who removed the inhabitants to Seleucia, a town built by him (Diodorus Siculus). A ſeventh of Troas, called Alexandria in Pliny's time. Antigonus.

ANTIGONUS I. one of the captains of Alexander the Great, was the ſon of Philip a Macedonian nobleman. After Alexander's death, a diviſion of the provinces taking place, Pamphylia, Lycia, and Phrygia Major fell to his ſhare. But Perdiccas, well acquainted with his ambitious ſpirit, and great abilities, determined to diveſt him of his government, and laid plans for his life, by bringing various accuſations againſt him. Antigonus, aware of the danger, retired with his ſon Demetrius into Greece, where he obtained the favour and protection of Antipater; and in a ſhort time Perdiccas dying, a new diviſion taking place, he was inveſted not only with the government of the former provinces, but alſo with that of Lycaonia. He was likewiſe entruſted with the command of the Macedonian houſehold troops, and upon Eumenes being declared a public enemy, he received orders to proſecute the war againſt him with the utmoſt vigour. On the commencement of this war, Eumenes ſuffered a total overthrow, and was obliged to retire with only 600 brave followers to a caſtle ſituated on an inacceſſible rock, where he might reſt in ſafety from all the aſſaults of Antigonus. In the interval, his friends aſſembling a new army for his relief, were routed by Antigonus, who now began to exhibit the great projects of his ambition. Polyſperchon ſucceeding to the tutorſhip of the young king of Macedon after Antipater's death, Antigonus reſolved to ſet himſelf up as lord of all Aſia. On account of the great power of Eumenes, he greatly deſired to gain him over to his intereſt, but that faithful commander effecting his eſcape from the fortreſs where he was cloſely blockaded, raiſed an army, and was appointed the royal general in Aſia. The governors of Upper Aſia co-operating with him, he ſucceeded in ſeveral engagements againſt Antigonus, but was at laſt delivered up to him through treachery, and put to death. Upon this, the governors of Upper Aſia yielded to Antigonus. Thoſe whom he ſuſpected, he either ſacrificed to his reſentment or diſplaced them from their offices. Then ſeizing upon all the treaſures at Suſa, he directed his march towards Babylon, of which city Seleucus was governor. Seleucus fled to Ptolemy, and entered into a league with him, together with Lyſimachus and Caſſander, with the intention of giving a check to the exorbitant power of Antigonus, who, notwithſtanding this, made a ſucceſsful attempt upon the provinces of Syria and Phenicia. Yet theſe provinces were ſoon after recovered by Ptolemy, who defeated his ſon Demetrius, while he himſelf was employed in repelling Caſſander, who had made rapid progreſs in Leſſer Aſia. They were again taken by Antigonus, and he being flushed with his ſucceſs, planned an expedition againſt the Nabathæan Arabs, dwelling in the deſerts adjacent to Judea; but on the firſt enterpriſe againſt the town of Petra, his general Athenæus, with almoſt all his troops, was cut to pieces by the Arabs. Antigonus then ſent his ſon againſt them, who returned after forcing them to reaſonable terms. Demetrius then

Antigonus. then expelled Seleucus from Babylon, and ſucceſs attending his arms wherever he went, the confederates were obliged to make a treaty with Antigonus, in which it was ſtipulated, that he ſhould remain in poſſeſſion of all Aſia, but that the Greek cities ſhould continue in poſſeſſion of their liberty. This agreement was ſoon violated, under the pretence that garriſons had been placed in ſome of theſe cities by Antigonus. At firſt Ptolemy made a ſucceſsful deſcent in Leſſer Aſia and on ſeveral of the iſlands of the Archipelago; but he was at length defeated by the ſucceſsful arms of Demetrius in a ſea-fight, who alſo took the iſland of Cyprus, with many priſoners. On this victory Antigonus was ſo elated that he aſſumed the title of king, and beſtowed the ſame upon his ſon; and from that time, B. C. 306, his reign in Aſia, and that of Ptolemy in Egypt, and of the other captains of Alexander in their reſpective governments, properly commence.

Irritated at the hoſtile conduct of Ptolemy, Antigonus prepared a numerous army and a formidable fleet, and having taken the command of the army, he gave the command of the fleet to Demetrius, and haſtened to attack him in his own dominions. After enduring the ſevereſt hardſhips, they met in the vicinity of Mount Caſſius; but Ptolemy acted with ſuch valour and addreſs that Demetrius could gain no advantage over him; and after ſeveral fruitleſs attempts, he abandoned the undertaking. He next attempted the reduction of Rhodes, but meeting with obſtinate reſiſtance, he was obliged to make a treaty upon the beſt terms that he could, having been called to join Antigonus againſt Caſſander, who at this time had formed a confederacy with Seleucus and Lyſimachus. When Demetrius united his forces with thoſe of Antigonus, they advanced to Phrygia, and having met the enemy at Ipſus, a deciſive battle was fought, in which Antigonus fell, in the 84th year of his age, B. C. 301.

Ardent in his paſſions, Antigonus frequently uſed improper means for their gratification; but as a ſoldier he was ſagacious, active, brave, and fortunate. An inſatiable ambition, however, the general paſſion of great men, proved a ſtrong ſtimulus to all his actions; but with theſe blemiſhes better qualities were blended in his character. The violence and temerity of youth were tempered by the clemency and moderation of advanced life, and he endeavoured to conciliate the affections of thoſe whom force had ſubjected to his power. In matters of private concern he was ſtrictly juſt; for when his brother wiſhed him to liſten to a cauſe in private where he was concerned, he exclaimed, "No, my dear brother, I will hear it in the open court of juſtice, becauſe I mean to do juſtice." When flattered with the title of god, he replied, "My chamberlain well knows the contrary;" and ſimilar philoſophical ſentiments would frequently drop from his lips. He apologized for the rigour of his taxes by ſaying, "Alexander reaped Aſia, but I only glean it." He ſhone with peculiar luſtre in domeſtic retirement. Notwithſtanding the ſtrong ambition of his ſon Demetrius, he continued in perfect harmony both with him and all his family. The ſon had a full ſhare of the authority of the father; and one day ſaluting his ſon upon his return from hunting in the preſence of ſome ambaſſadors, he deſired them to tell their maſters upon what terms he lived with his ſon. (*Gen. Biog.*)

Antigonus. Antigonus *Gonatas*, ſon of Demetrius Poliorcetes, was the grandſon of the former Antigonus. His character was eminently diſtinguiſhed by humanity and mildneſs of diſpoſition. When he beſieged Thebes under the command of his father, he ſtrongly remonſtrated againſt the loſs of ſo many lives for ſuch an inſignificant object. Filial affection was ſo powerful in his mind, that when his father was taken priſoner by Seleucus, he generouſly offered himſelf in his room, and being rejected, he wore deep mourning, and refrained from all pleaſures and amuſements during his father's impriſonment. Informed of his death, all the kings to borrow bank from his tender heart, and ſailing with a fleet to meet his aſhes, he received them with all the demonſtrations of filial ſenſibility and dutiful reſpect. By the death of his father he became maſter of all the European dominions of Demetrius, together with the kingdom of Macedon and various other cities in Greece. The Gauls invading his country, he defeated and expelled them, but was ſoon after routed by Pyrrhus king of Epirus. Some time after, however, Pyrrhus was ſlain at Argos, and when his head was brought him by his ſon, he expreſſed the higheſt diſpleaſure, and throwing his robe over it, he gave orders to ſearch for his body, and to inter the ſame with all funeral honours. With ſingular kindneſs, alſo, he treated Helenus, the ſon of that unfortunate king, who fell into his hands by the fortune of war.

In the evening of his reign, he ſo cultivated the arts of peace, and ſo conciliated the minds of his ſubjects, that he ſecured their affections both to himſelf and his deſcendants. The taking of the citadel of Corinth by intrigue was the meaneſt action of his reign, but he improved that event in maintaining the freedom of the ſmall ſtates of Greece, and in increaſing his own dominions. The Achæans, and Aratus, their famous chief, vigorouſly oppoſed his meaſures, and at length recovered Corinth; but Antigonus was ſo inclined to peace, that notwithſtanding this event, he purſued his wonted plan, and left his kingdom in peace about the 80th year of his life, and the 34th of his reign, B. C. 243; and Demetrius II. his ſon, next aſcended the throne. (*Gen. Biog.*)

ANTIGRAPHUS, in antiquity, an officer of Athens, who kept a counterpart of the apodecti, or chief treaſurer's accounts, to prevent miſtakes, and keep them from being falſified.

Antigraphus is alſo uſed, in middle-age writers, for a ſecretary or chancellor. He is thus called, according to the old gloſſariſts, on account of his writing anſwers to the letters ſent to his maſter. The antigraphus is ſometimes alſo called *archigraphus*; and his dignity *antigraphia*, or *archigraphia*.

Antigraphus is alſo uſed in Iſidorus for one of the notes of ſentences which is placed with a dote to denote a diverſity of ſenſe in tranſlations.

Antigraphus is alſo applied in eccleſiaſtical writers to an abbreviator of the papal letters. In which ſenſe the word is uſed by Pope Gregory the Great in his regiſter. Of late days the office of antigraphus conſiſts in making minutes of bulls from the petitions agreed to by his holineſs, and renewing the bulls after engroſſing.

ANTIGUA, one of the Antilles or Caribbee iſlands, ſituated 22 leagues eaſt of St Chriſtopher's, in

Antigua || Antilibanus.

W. Long. 62. 5. and N. Lat. 17. 30. It is about 50 miles in circumference, and is reckoned the largeſt of all the Britiſh leeward iſlands.

This iſland having no rivers, and but few ſprings, or ſuch as are brackiſh, the inhabitants are obliged to preſerve the rain water in ciſterns. The air here is not ſo wholeſome as in the neighbouring iſlands, and it is more ſubject to hurricanes; but it has excellent harbours, particularly Engliſh Harbour, which is capable of receiving the largeſt man of war in the navy. Here is alſo a dock yard, ſupplied with all ſtores and conveniences for repairing and careening ſhips. The principal trade, however, is carried on in the harbour of St John's, the capital, ſituated in the north-weſt part of the iſland, and which has water ſufficiently deep for merchant veſſels. The town of St John's was once in a very flouriſhing condition, as may be judged by the loſs ſuſtained at the late fire, which was computed at the amazing ſum of 400.000l.

This iſland was firſt attempted to be ſettled by Sir Thomas Warner, about the ſame time with St Chriſtopher's and Nevis: but no eſtabliſhment then took place. It was afterwards granted by Charles II. to Lord Willoughby, then governor of Barbadoes, who ſettled a colony upon it in the ſpace of a few years. In a ſhort time, but by what means is not evident, it became again the public property. It raiſes at preſent about 16,000 hogſheads of ſugar, which was at firſt of a very bad quality, unfit for the Engliſh market; but the planters have greatly improved their ſtaple ſince, and it is now as good as in any of the other iſlands. It has continued unmoleſted in all the late wars with France. The number of white inhabitants is reckoned about 10.000. It is divided into five pariſhes; that of St John's Town, which is reckoned the capital of the north-weſt part, and conſiſts of above 200 houſes; thoſe of Falmouth, Porham, and Bridge Town, on the ſouth ſide; and St Peter's, which has no town, but lies almoſt in the middle of the iſland.

ANTIGUGLER, is a crooked tube of metal, ſo bent as eaſily to be introduced into the necks of bottles, and uſed in decanting liquors, without diſturbing them. For this purpoſe the bottle ſhould be a little inclined, and about half a ſpoonful of the liquor poured out, ſo as to admit an equal quantity of air; let one end of the bent tube be ſtopped with the finger, whilſt the other is thruſt into the body of the liquor near to the bubble of air already admitted. When the finger is taken off, the bottle will have vent, and the liquor will run out ſteadily and undiſturbed.

ANTIHECTICS, in *Pharmacy*, medicines good in hectical diſorders.

ANTIHECTICUM POTERII, the name of a medicine formerly much celebrated, but now laid aſide in common practice.

ANTILIBANUS, in *Ancient Geography*, a mountain of Cœloſyria, which bounds it on the ſouth, running parallel with Libanus: they both begin a little above the ſea. Libanus near Tripolis, Antilibanus at Sidon: and both terminate near the mountains of Arabia, which run to the north of Damaſcus, and the mountains of Traconitis, and there end in other mountains, (Strabo). The Scripture, making no diſtinction between Libanus and Antilibanus, calls them by the common name *Lebanon*.

ANTILLES, the French name for the CARIBBEE iſlands. Antilles || Antimetabole

ANTILOGARITHM, the complement of the logarithm of a ſine, tangent, or ſecant; or the difference of that logarithm from the logarithm of 90 degrees.

ANTILOGY, in matters of literature, an inconſiſtency between two or more paſſages of the ſame book.

ANTILOPE. See CAPRA.

ANTIMENSIUM, a kind of conſecrated table-cloth, occaſionally uſed in the Greek church, in places where there is no proper altar. F. Goar obſerves, that in regard the Greeks had but few conſecrated churches, and that conſecrated altars are not things eaſy to be removed, that church has, for many ages, made uſe of certain conſecrated ſtuffs or linens, called *antimenſia*, to ſerve the purpoſes thereof.

ANTIMENSIUM, in the Greek church, anſwers to the *altare portabile*, or portable altar in the Latin church. They are both only of late invention, though Habertus would have them as old as St Baſil. But Durant and Bona do not pretend to find them in any author before the time of Bede and Charlemagne.

ANTIMENSIA is alſo applied to other tables, uſed in offices of religion, beſides thoſe whereon the euchariſt is adminiſtered: ſuch, e. g. are thoſe whereon the hoſt is expoſed, &c. The origin of the antimenſia is deſcribed by Meurſius: when the biſhop had conſecrated a church, the cloth which had been ſpread on the ground and over the communion table, was torn in pieces, and diſtributed among the prieſts, who carried each a fragment away, to ſerve to cover the tables in their churches and chapels. Not that it was neceſſary that ſuch cloths ſhould be laid on all tables; but only on thoſe which either were not conſecrated, or at leaſt whoſe conſecration was doubted of.

ANTIMERIA, in *Grammar*, a figure whereby one part of ſpeech is uſed for another: e. g. *velle ſuam cuique eſt*, for *voluntas ſua cuique eſt*; alſo, *populus latè rex*, for *populus latè regnans*.

ANTIMERIA, in a more reſtrained ſenſe, is a figure where the noun is repeated inſtead of the pronoun. The antimeria is frequent in the Hebrew, and is ſometimes retained in our verſion of the Old Teſtament accordingly: e. g. *Hear my voice, ye wives of Lamech*, for *my wives*, Gen. iv. 23.

ANTIMETABOLE, in *Rhetoric*, a figure which ſets two things in oppoſition to each other. The word is Greek, compounded of *ανθ* *againſt*, and *μεταβολη* from *μεταβαλλω*, I *ſhift* or *tranſfer*, i. e. ſhifting, or ſetting two things over-againſt each other. This figure is twice exemplified in an apophthegm of Muſonius; which, on account of its excellence, is called *aureum monitum*, the golden maxim or precept.

Αν τι πραξης καλον μετα πονυ, ομεν πονος οιχεται, το δε καλον μενει.

Αν τι ποιησης αισχρον μετα ηδονης, το μεν ηδυ οιχεται, το δε αισχρον μενει.

In Engliſh thus:

"Allowing the performance of an honourable action to be attended with labour; the labour is ſoon over, but the honour immortal: whereas, ſhould even pleaſure wait on the commiſſion of what is diſhonourable, the pleaſure is ſoon gone, but the diſhonour eternal."

ANTIMETATHESIS,

Antimetathesis || Antimony

ANTIMETATHESIS, in *Rhetoric*, is the inversion of the parts or members of an antitheſis. Such is that of Cicero in Verrem, lib. iv. cap. 52. "Compare this peace with that war; the arrival of this governor with the victory of that general; his profligate troops with the invincible army of the other; the luxury of the former with the temperance of the latter: you will ſay, that Syracuſe was founded by him who took it; and taken by him, who held it when founded."

ANTIMONARCHICAL, an appellation given to whatever oppoſes monarchical government.

ANTIMONIALS, in *Medicine*, preparations of antimony. See PHARMACY.

ANTIMONY, a blackiſh mineral ſubſtance, ſtaining the hands, full of long, ſhining, needle-like ſtriæ, hard, brittle, and conſiderably heavy. It is found in different parts of Europe, as Bohemia, Saxony, Tranſylvania, Hungary, France, and England; commonly in mines by itſelf, intermixed with earth and ſtony matters. Sometimes it is blended with the richer ores of ſilver, and renders the extraction of that metal difficult by volatilizing a part of the ſilver, or, in the language of the miners, *robbing the ore*. See METALLURGY, for the different operations.

Antimony is the *ſtibium* of the ancients; by the Greeks called στιμμι. The reaſon of its modern denomination, *antimony*, is uſually referred to Basil Valentine a German monk, who, as the tradition relates, having thrown ſome of it to the hogs, obſerved, that, after purging them violently, they immediately grew fat upon it. This made him think, that by giving his fellow monks a like doſe, they would be the better for it. The experiment, however, ſucceeded ſo ill, that they all died of it; and the medicine thenceforward was called *antimony*, q. d. *anti-monk*.

Uſes. Antimony at firſt was of ſervice only in the compoſition of paint. Scripture deſcribes it to us as a ſort of paint, with which the women blackened their eyebrows. Jezebel, underſtanding that Jehu was to enter Samaria, painted her eyes with antimony; or, according to the Hebrew, "put her eyes in antimony." As large black eyes were thought the fineſt, they of both ſexes, who were careful of their beauty, rubbed their eyes, eyelids, and round the eyes, with a needle dipped in a box of paint made of antimony, with a deſign of blackening them.—At this day, the women of Syria, Arabia, and Babylonia, anoint and blacken themſelves about the eyes; and both men and women put black upon their eyes in the deſert, to preſerve them from the heat of the ſun and the piercing of its rays. M. Darvieux tells us, that the Arabian women border their eyes with a black colour made of tutty, which the Arabians call *rebel*. They draw a line of this kind of blacking without the corner of their eyes, to make them appear larger. Iſaiah, in his enumeration of the ſeveral ornaments belonging to the daughters of Sion, has not forgot the needles which they made uſe of in painting their eyes and eyelids. Nor has this practice eſcaped the laſh of Juvenal:

Ille ſupercilium madida fuligine tinctum
Obliqua producit acu, pingitque trementes
Attollens oculos.

Ezekiel, diſcovering the irregularities of the Jewiſh nation under the idea of a debauched woman, says, that ſhe bathed and perfumed herſelf, and that ſhe anointed her eyes with antimony. Job ſhows ſufficiently how much antimony was in eſteem, by calling one of his daughters a veſſel of antimony, or a box to put paint in, *cornu ſtibii*. The author of the book of Enoch ſays, that before the deluge the angel Azleel taught young women the art of painting themſelves.

Tertullian and St Cyprian have declaimed very warmly againſt this cuſtom of painting the eyes and eyebrows, which was much practiſed in Africa even by the men: *Inunge oculos tuos non ſtibio diaboli, ſed collyrio Chriſti*, ſays St Cyprian. Pliny, ſpeaking of the Roman ladies, ſays, that they painted their very eyes: *Tanta eſt decoris affectatio, ut tingantur oculi quoque*. Sardanapalus painted his eyes and eyebrows. Joſephus reproaches the ſeditious with the ſame, who aſſumed the name of zealots, and made themſelves maſters of the temple of Jeruſalem.

The modern uſes of antimony are very numerous and important. It is a common ingredient in ſpecula or burning concaves, ſerving to give the compoſition a finer texture. It makes a part in bell metal, and renders the ſound more clear. It is mingled with tin, to make it more hard, white, and ſounding; and with lead, in the caſting of printers letters, to render them more ſmooth and firm. It is alſo a general help in the melting of metals, and eſpecially in caſting of cannon-balls. It is likewiſe made uſe of for purifying and heightening the colour of gold. See CHEMISTRY *Index*.

For a long time this mineral was eſteemed poiſonous. In 1566, its uſe was prohibited in France by an edict of parliament; and in 1609, one Beſnier was expelled the faculty for having given it. The edict was repealed in 1652; antimony having a few years before been received into the number of purgatives. In 1668, a new edict came forth, forbidding its uſe by any but doctors of the faculty. It is now univerſally allowed, that pure antimony in its crude ſtate has no noxious quality, and that though many of its preparations are moſt virulently emetic and cathartic, yet by a ſlight alteration or addition, they loſe their virulence, and become mild in their operation.

The virtues of antimony in the diſeaſes of animals are greatly extolled. Pigs that have the meaſles are at all times recovered by it, which proves it a great purifier of the blood. Horſes who have running heels that cannot be cured by the common methods uſed by the farriers, will generally be cured by this medicine in a little time. The manner of uſing it is this: Mix one drachm with every feeding of oats which the horſe has in a morning. It is beſt put together in one place, buried under a few oats; and the horſe's head being withheld a little, and then let go juſt againſt that place, he will take it all in at a mouthful. Some horſes do not diſlike it: others obſtinately refuſe it, but to theſe it may be eaſily given in balls. The virtues of this drug in fattening cattle have been thought imaginary, but experiment proves it to be a real truth. A horſe that is lean and ſcabby, and not to be fatted by any other means, will become fat on taking a doſe of antimony every morning for two months together. A boar fed for brawn, and having an ounce of anti-

mony

mony given him every morning, will become fat a fortnight ſooner than others put into the ſtye at the ſame time, and fed in the ſame manner, but without the antimony.

ANTINOE. See ENFINE.

ANTINOEIA, in antiquity, annual ſacrifices, and quinquennial games, in memory of Antinous the Bithynian. They were inſtituted at the command of Adrian, the Roman emperor, at Mantinea, in Arcadia, where Antinous was honoured with a temple and divine worſhip.

ANTINOMIANS, in eccleſiaſtical hiſtory, certain heretics who maintain the law of no uſe or obligation under the goſpel-diſpenſation, or who hold doctrines that clearly ſuperſede the neceſſity of good works and a virtuous life. The Antinomians took their origin from John Agricola about the year 1538; who taught that the law is no ways neceſſary under the goſpel: that good works do not promote our ſalvation, nor ill ones hinder it; that repentance is not to be preached from the decalogue, but only from the goſpel.

This ſect ſprung up in England during the protectorate of Oliver Cromwell, and extended their ſyſtem of libertiniſm much farther than Agricola the diſciple of Luther. Some of their teachers expreſsly maintained, that as the elect cannot fall from grace, nor forfeit the Divine favour, the wicked actions they commit are not really ſinful, nor are to be conſidered as inſtances of their violation of the divine law; and that conſequently they have no occaſion either to confeſs their ſins, or to break them off by repentance. According to them, it is one of the eſſential and diſtinctive characters of the elect, that they cannot do any thing which is either diſpleaſing to God or prohibited by the law.—Luther, Rutherford, Schluſſelburg, Sedgwick, Gataker, Witſius, Bull, Williams, &c. have written refutations; Criſp, Richardſon, Saltmarſh, &c. defences, of the Antinomians; Wigandus, a compariſon between ancient and modern Antinomians.

The doctrine of Agricola was in itſelf obſcure, and perhaps repreſented worſe than it really was by Luther, who wrote with acrimony againſt him, and firſt ſtyled him and his followers *Antinomians*. Agricola ſtood on his own defence, and complained that opinions were imputed to him which he did not hold. Nicholas Amſdorf fell under the ſame odious name and imputation, and ſeems to have been treated more unfairly than even Agricola himſelf. It is rather hard to charge upon a man all the opinions that may be inferred from things that have haſtily dropped from him, when he himſelf diſavows ſuch inferences.

ANTINOUS, the favourite of Adrian, was born at Bithynus in Bithynia. His beauty engaged the heart of Adrian in ſuch a manner, that there never was a more boundleſs and extravagant paſſion than that of this emperor towards this youth. After his death, the emperor ordered divine honours to be paid him; and he alſo erected a city of his name. See ENFINE.

ANTIOCH, a city of Syria in Aſia, ſituated on the river Orontes, in E. Long. 37. 5. N. Lat. 36. 20. It was built by Seleucus Nicator, founder of the Syro-Macedonian empire, who made it his capital. It ſtood on the above-mentioned river, about 20 miles from the place where it empties itſelf into the Mediterranean; being equally diſtant from Conſtantinople and Alexandria in Egypt, that is, about 700 miles from each. Seleucus called it *Antioch*, from his father's name, according to ſome; or from that of his ſon, according to others. He built 16 other cities bearing the ſame name; of which one, ſituated in Piſidia, is probably that where the name of *Chriſtians* was firſt given to the followers of Jeſus Chriſt. But that ſituated on the Orontes by far eclipſed, not only all the others of this name, but all the cities built by Seleucus. Antigonus, not long before, had founded a city in that neighbourhood, which from his own name he had called *Antigonia*, and deſigned it for the capital of his empire: but it was razed to the ground by Seleucus, who employed the materials in building his metropolis, and alſo tranſplanted the inhabitants thither. Antioch.

The city of Antioch was afterwards known by the name of *Tetrapolis*, being divided as it were into four cities, each of them being ſurrounded with its proper wall, beſides a common one which encloſed them all. The firſt of theſe cities was built by Seleucus Nicator, as already mentioned; the ſecond by thoſe who flocked thither on its being made the capital of the Syro-Macedonian empire; the third by Seleucus Callinicus; and the fourth by Antiochus Epiphanes.—About four or five miles diſtant, ſtood a place called *Daphne*, which was nevertheleſs reckoned a ſuburb of Antioch. Here Seleucus planted a grove, and in the middle of it built a temple which he conſecrated to Apollo and Diana, making the whole an aſylum. To this place the inhabitants of Antioch reſorted for their pleaſures and diverſions; whereby it became at laſt ſo infamous, that "to live after the manner of Daphne" was uſed as a proverb to expreſs the moſt voluptuous and diſſolute way of living. Here Lucius Verus, the colleague of M. Aurelius, choſe to take up his reſidence, inſtead of marching againſt the Parthians; while his general Caſſius forbade by proclamation any of his ſoldiers to enter or even go near the place. In ſhort, ſo remarkable was Daphne of old, that the metropolis itſelf was diſtinguiſhed by it, and called *Antioch near Daphne*.

Though Antioch continued to be, as Pliny calls it, the queen of the Eaſt, for near 1600 years; yet ſcarce any city mentioned in hiſtory hath undergone ſuch calamities, both from the attacks of its enemies, and its being naturally ſubject to earthquakes. The firſt diſaſter mentioned in hiſtory which befel the Antiochians happened about 145 years before Chriſt. Being at that time very much diſaffected to the perſon and government of Demetrius their king, they were continually raiſing tumults and ſeditions; inſomuch that he found himſelf at laſt obliged to ſolicit aſſiſtance from the Jews; and was furniſhed by Jonathan, one of the Maccabees, with 3000 men; by which reinforcement, believing himſelf ſufficiently ſtrong to reduce the mutineers by force, he ordered them immediately to deliver up their arms. This unexpected order cauſed a great uproar in the city. The inhabitants ran to arms, and inveſted the king's palace, to the number of 120,000, with a deſign to put him to death. All the Jews haſtened to his relief, fell upon the rebels, killed 100,000 of them, and ſet fire to the city. On the deſtruction of the Syrian empire by the Romans, Antioch ſubmitted to them as well as the other cities of that kingdom, and continued for a long time under their dominion. About the year 115, in the reign of the

Antioch. the emperor Trajan, it was almoſt entirely ruined by one of the moſt dreadful earthquakes mentioned in hiſtory. Trajan himſelf happened to be there at that time, being returned from an expedition againſt the Parthians; ſo that the city was then full of troops, and ſtrangers come from all quarters either out of curioſity or upon buſineſs and embaſſies: the calamity was by this means felt almoſt in every province of the Roman empire. The earthquake was preceded by violent claps of thunder, unuſual winds, and a dreadful noiſe under ground. The ſhock was ſo terrible, that great numbers of houſes were overturned, and others toſſed to and fro like a ſhip at ſea. Thoſe who happened to be in their houſes were for the moſt part buried under their ruins: thoſe who were walking in the ſtreets or in the ſquares, were, by the violence of the ſhock, daſhed againſt each other, and moſt of them either killed or dangerouſly wounded. This earthquake continued, with ſome ſmall intermiſſion, for many days and nights; ſo that vaſt numbers periſhed. The moſt violent ſhock, according to the Acts of St Ignatius, was on a Sunday, December 23. By this Trajan was much hurt, but eſcaped through a window. Dion Caſſius pretends, that he was taken out of the window by one who exceeded the human ſize in talneſs. The ſame hiſtorian adds, that Mount Liſon, which ſtood at a ſmall diſtance from the city, bowed its head and threatened to fall down upon it: that other mountains fell; that new rivers appeared, and others that had flowed before forſook their courſe and vaniſhed. When the earthquake ceaſed, a woman was heard crying under the ruins; which being immediately removed, ſhe was found with a living child in her arms. Search was made for others; but none was found alive, except one child which continued ſucking its dead mother.

No doubt, Trajan, who was an eye-witneſs of this terrible calamity, would contribute largely towards the re-eſtabliſhment of Antioch in its ancient ſplendour. Its good fortune, however, did not continue long; for in 155, it was almoſt entirely burnt by accidental fire; when it was again reſtored by Antoninus Pius. In 176 or 177, the inhabitants having ſided with Caſſius, the above-mentioned Roman general, who had revolted from M. Aurelius, that emperor publiſhed a ſevere edict againſt them, deprived them of all their privileges, ſuppreſſed their public aſſemblies, and took from them the ſhows and ſpectacles to which they were greatly addicted: but his anger being ſoon appeaſed, he reſtored them to their former condition, and even condeſcended to viſit their city. In 194, having ſided with Niger againſt Severus, the latter deprived them of all their privileges, and ſubjected Antioch as a mere village to Laodicea; but, however, pardoned them the next year, at the entreaties of his eldeſt ſon, then a child.

When the power of the Roman empire began to decline, Antioch became the bone of contention between them and the eaſtern nations; and, accordingly, on the breaking out of a Perſian war, it was almoſt always ſure to ſuffer. In 242, it was taken and plundered by Sapor; and, though he was defeated by Gordian, it underwent the ſame misfortune in the time of Valerian, about 18 years after; and after the defeat and captivity of Valerian, being taken by the Perſian monarch a third time, he not only plundered it, but levelled all the public buildings with the ground. The Perſians, however, being ſoon driven out, this unfortunate city continued free from any remarkable calamity till about the time of the diviſion of the Roman empire by Conſtantine in 331. It was then afflicted with ſo grievous a famine, that a buſhel of wheat was ſold for 40 pieces of ſilver. During this grievous diſtreſs, Conſtantine ſent to the biſhop 30,000 buſhels of corn; beſides an immenſe quantity of all kinds of proviſions, to be diſtributed among the eccleſiaſtics, widows, orphans, &c. In the year 347, Conſtantine II. cauſed a harbour to be made at Seleucia, for the conveniency of Antioch. This was effected at an immenſe expenſe; the mouth of the Orontes, where the port was made, being full of ſands and rocks. When the emperor Julian ſet out on his expedition againſt the Perſians, he made a long ſtay at Antioch, during which time, many of the Roman provinces were afflicted with a famine, but which raged more violently at Antioch than in other places. The eccleſiaſtical writers of thoſe times ſay, that this famine followed Julian from place to place; and as he continued longer at Antioch than any other city, it raged more violently there than anywhere elſe. To remedy this evil, Julian fixed the price of corn: by which means the famine was greatly increaſed, the merchants conveying their corn privately to other places, ſo that this metropolis was reduced to a moſt deplorable ſituation. In 381, in the reign of Theodoſius the Great, Antioch was again viſited by a famine, accompanied by a grievous plague. The latter ſoon ceaſed: but, the famine ſtill continuing, the biſhop, Libanius, applied to Icarius, count of the Eaſt, requeſting him by ſome means or other to relieve the poor, who had flocked from all parts to the metropolis, and were daily periſhing in great numbers; but to this Icarius gave no other anſwer, than that they were abhorred and juſtly puniſhed by the gods. This inhuman anſwer raiſed great diſturbances; which, however, were terminated without bloodſhed. In 387, Theodoſius, finding his exchequer quite drained, and being obliged to be at an extraordinary expence in celebrating the fifth year of the reign of his ſon Arcadius, and the tenth of his own, an extraordinary tax was laid upon all the people in the empire. Moſt of the cities ſubmitted willingly to this: but the people of Antioch, complaining of it as an unreaſonable oppreſſion, crowded to the houſe of Flavianus, their biſhop, as ſoon as the edict was publiſhed, to implore his protection. Being unable to find him, they returned to the forum; and would have torn the governor in pieces, had not the officers who attended him kept back with great difficulty the enraged multitude, till he made his eſcape. Upon this, they broke ſome of the emperor's ſtatues, and dragged others through the city, uttering the moſt injurious and abuſive expreſſions againſt him and his whole family. They were, however, diſperſed by a body of archers, who, by wounding only two of the rabble, ſtruck terror into all the reſt. The governor proceeded againſt the offenders with the utmoſt cruelty; expoſing ſome to wild beaſts in the theatre, and burning others alive. He did not ſpare even the children, who had inſulted the emperor's ſtatues; and cauſed ſeveral perſons to be executed, who had been only ſpectators of the diſorder. In the mean time a report was ſpread, that a body of troops was at hand, with orders to plunder the city,

Antioch. city, and put all to the ſword, without diſtinction of ſex or age; upon which the citizens abandoned their dwellings in the utmoſt terror and confuſion, retiring to the neighbouring mountains with their wives and families. As the report proved groundleſs, ſome of them returned; but the greater part dreading the cruelty of the governor, and the diſpleaſure of the emperor, continued in their retreats. To thoſe who returned, St Chryſoſtom preached ſome homilies, which have reached our times, and are greatly admired; and which are ſaid by St Chryſoſtom himſelf, as well as ſome cotemporary writers, to have had a conſiderable effect in reforming the lives of this licentious and diſſolute people. On hearing the news of this tumult, Theodoſius was ſo much enraged, that he commanded the city to be deſtroyed, and its inhabitants to be put to the ſword without diſtinction; but this order was revoked before it could be put into execution, and he contented himſelf with a puniſhment ſimilar to that inflicted by Severus above mentioned. He appointed judges to puniſh the offenders; who proceeded with ſuch ſeverity, and condemned ſuch numbers, that the city was thrown into the utmoſt conſternation. On this occaſion, St Chryſoſtom and the hermits, who were very numerous in the neighbourhood, exerted all their eloquence in behalf of the unhappy people, and obtained a reſpite for thoſe who had been condemned. They next proceeded to draw up a memorial to the emperor in favour of the citizens in general; and being joined by Flavianus, at laſt obtained a general pardon, and had the city reſtored to all its former privileges.

In the year 458, Antioch was almoſt entirely ruined by an earthquake, which happened on the 14th of September; ſcarce a ſingle houſe being left ſtanding in the moſt beautiful quarter of the city. The like misfortune it experienced in 529, during the reign of the emperor Juſtin; and in 15 years after, being taken by Coſrhoes king of Perſia, that inſulting and haughty monarch gave it up to his ſoldiers, who put all they met to the ſword. The king himſelf ſeized on all the gold and ſilver veſſels belonging to the great church; and cauſed all the valuable ſtatues, pictures, &c. to be taken down and conveyed to Perſia, while his ſoldiers carried off every thing elſe. The city being thus completely plundered, Coſrhoes ordered his men to ſet fire to it; which was accordingly done ſo effectually, that none of the buildings even without the walls eſcaped. Such of the inhabitants as eſcaped ſlaughter were carried into Perſia, and ſold as ſlaves.

Notwithſtanding ſo many and ſo great calamities, the city of Antioch ſoon recovered its wonted ſplendour; but in a ſhort time underwent its uſual fate, being almoſt entirely deſtroyed by an earthquake in 587, by which 30,000 perſons loſt their lives. In 634, it fell into the hands of the Saracens, who kept poſſeſſion of it till the year 858, when it was ſurprized by one Burtzas, and again annexed to the Roman empire. The Romans continued maſters of it for ſome time, till the civil diſſenſions in the empire gave the Turks an opportunity of ſeizing upon it as well as the whole kingdom of Syria. From them it was again taken by the Croiſaders in 1098. In 1262, it was again taken by Bibars ſultan of Egypt, who put a final period to its glory.

Antioch is now no more than a ruinous town, whoſe houſes, built with mud and ſtraw, and narrow and miry ſtreets, exhibit every appearance of miſery and wretchedneſs. Theſe houſes are ſituated on the ſouthern bank of the Orontes, at the extremity of an old decayed bridge: they are covered to the ſouth by a mountain; upon the ſlope of which is a wall, built by the Cruſaders. The diſtance between the preſent town and this mountain may be about 400 yards, which ſpace is occupied by gardens and heaps of rubbiſh, but preſents nothing intereſting. Antioch || Antiochia.

Notwithſtanding the unpoliſhed manners of its inhabitants, Antioch was better calculated than Aleppo to be the emporium of the Europeans. By clearing the mouth of the Orontes, which is ſix leagues lower down, boats might have been towed up that river, though they could not have ſailed up, as Pococke has aſſerted: its current being too rapid. The natives, who never knew the name Orontes, call it, on account of the ſwiftneſs of its ſtream, *El-aaſi*, that is, the rebel. Its breadth at Antioch, is about forty paces. Seven leagues above that town it paſſes by a lake abounding in fiſh, and eſpecially in eels. A great quantity of theſe are ſalted every year, but not ſufficient for the numerous faſts of the Greek Chriſtians. It is to be remembered, we no longer hear at Antioch, either of the Grove, or Daphne, or of the voluptuous ſcenes of which it was the theatre.

The plain of Antioch, though the ſoil of it is excellent, is uncultivated, and abandoned to the Turcomans; but the hills on the ſide of the Orontes, particularly oppoſite Serkin, abound in plantations of figs and olives, vines, and mulberry trees, which, a thing uncommon in Turkey, are planted in quincunx, and exhibit a landſcape worthy our fineſt provinces.

Seleucus Nicator, who founded Antioch, built alſo at the mouth of the Orontes, on the northern bank, a large and well fortified city, which bore his name, but of which at preſent not a ſingle habitation remains; nothing is to be ſeen but heaps of rubbiſh, and works in the adjacent rock, which prove that this was once a place of very conſiderable importance. In the ſea alſo may be perceived the traces of two piers, which are indications of an ancient port, now choked up. The inhabitants of the country go thither to fiſh, and call the name of the place *Souaidia*.

ANTIOCHETTA, a town of Turkey in Aſia, in Caramania, with a biſhop's ſee, over againſt the iſland of Cyprus. E. Long. 32. 15. N. Lat. 36. 42.

ANTIOCHIA, in *Ancient Geography*, a town of Aſſyria, ſituated between the rivers Tigris and Tornadotus (Pliny).—Another of Caria, on the Meander; called alſo *Pythopolis*, *Athymbra*, and *Nyſſa* or *Nyſa*, (Stephanus): but Strabo ſays, that Nyſa was near Tralles.—A third of Cilicia Trachea, on Mount Cragus (Ptolemy).—A fourth, called *Epidaphnes*, the capital of Syria, diſtinguiſhed from cities of the ſame name, either by its ſituation on the Orontes, by which it was divided, or by its proximity to Daphne (See ANTIOCH).—A fifth Antiochia, a town of Comagene, on the Euphrates (Pliny).—A ſixth of Lydia *Tralles*, ſo called (Pliny.)—A ſeventh, of Margiana (Strabo, Pliny, Ptolemy), on the river Margus, taking its name from Antiochus, ſon of Seleucus, who rebuilt it, and walled it round, being before called *Alexandria*, from

Antiochian from Alexander the founder, and ſurnamed Syria; in
|| compaſs ſeventy ſtadia; whither Orodes carried the Ro-
Antiparos. mans, after the defeat of Craſſus (Pliny).—An eighth, in Meſopotamia, on the lake Calirrhoe, the old name of Edeſſa (Pliny).—A ninth Antiochia, on the river Mygdonius, in Meſopotamia, ſituated at the foot of Mount Maſius, and is the ſame with Niſibis (Strabo, Plutarch). It was the bulwark and frontier town of the Romans againſt the Parthians and Perſians, till given up to the Perſians, by Jovinian, by an ignominious peace (Ammian, Eutropius).—A tenth Antiochia, was that ſituated in the north of Piſidia (Luke, Ptolemy, Strabo): it was a Roman colony, with the appellation *Cæſarea*. There is an Antiochia at Mount Taurus, mentioned by Ptolemy, but by no other author.

ANTIOCHIAN SECT or *Academy*, a name given to the fifth academy, or branch of Academies. It took the denomination from its being founded by Antiochus, a philoſopher contemporary with Cicero.—The Antiochian academy ſucceeded the Philonian. As to point of doctrine, the philoſophers of this ſect appear to have reſtored that of the ancient academy, except that in the article of the criterion of truth. Antiochus was really a Stoic, and only nominally an Academic.

ANTIOCHIAN Epocha, a method of computing time from the proclamation of liberty granted the city of Antioch about the time of the battle of Pharſalia.

ANTIOCHUS, the name of ſeveral kings of SYRIA. See that article.

ANTIOCHUS of *Aſcalon*, a celebrated philoſopher, the diſciple of Philo of Lariſſa, the maſter of Cicero, and the friend of Lucullus and Brutus. He was founder of a fifth academy: but, inſtead of attacking other ſects, he ſet himſelf down to reconcile them together, particularly the ſect of the Stoics with that of the ancient academy.

ANTIOPE, in *Fabulous Hiſtory*, the wife of Lycus, king of Thebes, who, being deflowered by Jupiter in the form of a ſatyr, brought forth Amphion and Zethus.—Another Antiope was queen of the Amazons; and, with the aſſiſtance of the Scythians, invaded the Athenians; but was vanquiſhed by Theſeus.

ANTIPÆDOBAPTISTS, (derived from αντι, *againſt*, παις, παιδος, *child*, and βαπτιζω, *baptize*, whence βαπτιστης), is a diſtinguiſhing denomination given to thoſe who object to the baptiſm of infants; becauſe they ſay infants are incapable of being inſtructed, and of making that profeſſion of faith which entitles them to this ordinance, and an admiſſion into church communion. See ANABAPTISTS and BAPTISTS.

ANTIPAROS, an iſland in the Archipelago, oppoſite to Paros, from which it is ſeparated by a ſtrait about ſeven miles over. It is the *Olearos* or *Oliaros*, mentioned by Strabo, Pliny, Virgil, Ovid, &c.; and was, according to Heraclides Ponticus as quoted by Stephanus, firſt peopled by a Phœnician colony from Sidon.—According to Mr Tournefort's account, it is about 16 miles in circumference, produces a little wine and cotton, with as much corn as is neceſſary for the maintenance of 60 or 70 families, who live together in a village at one end of the iſland, and are moſtly Malteſe and French corſairs.

This iſland is remarkable for a ſubterraneous cavern or grotto, accounted one of the greateſt natural curioſities in the world. It was firſt diſcovered in the laſt century by one Magni an Italian traveller, who has given us the following account: "Having been informed (ſays he) by the natives of Paros, that in the little iſland of Antiparos, which lies about two miles from the former, of a gigantic ſtatue that was to be ſeen at the mouth of a cavern in that place, it was reſolved that we (the French conſul and himſelf) ſhould pay it a viſit. In purſuance of this reſolution, after we had landed on the iſland, and walked about four miles through the midſt of beautiful plains and ſloping woodlands, we at length came to a little hill, in the ſide of which yawned a moſt horrid cavern, that, with its gloom, at firſt ſtruck us with terror, and almoſt repreſſed curioſity. Recovering the firſt ſurpriſe, however, we entered boldly; and had not proceeded above 20 paces, when the ſuppoſed ſtatue of the giant preſented itſelf to our view. We quickly perceived, that what the ignorant natives had been terrified at as a giant, was nothing more than a ſparry concretion, formed by the water dropping from the roof of the cave, and by degrees hardening into a figure that their fears had formed into a monſter. Incited by this extraordinary appearance, we were induced to proceed ſtill further, in queſt of new adventures in this ſubterranean abode. As we proceeded, new wonders offered themſelves; the ſpars, formed into trees and ſhrubs, preſented a kind of petrified grove; ſome white, ſome green; and all receding in due perſpective. They ſtruck us with the more amazement, as we knew them to be mere productions of Nature, who, hitherto in ſolitude, had, in her playful moments, dreſſed the ſcene as if for her own amuſement.

"But we had as yet ſeen but a few of the wonders of the place, and we were introduced as yet only into the portico of this amazing temple. In one corner of this half-illuminated receſs, there appeared an opening of about three feet wide, which ſeemed to lead to a place totally dark, and that one of the natives aſſured us contained nothing more than a reſervoir of water. Upon this we tried, by throwing down ſome ſtones, which rumbling along the ſides of the deſcent for ſome time, the ſound ſeemed at laſt quaſhed in a bed of water. In order, however, to be more certain, we ſent in a Levantine mariner, who, by the promiſe of a good reward, with a flambeau in his hand, ventured into this narrow aperture. After continuing within it for about a quarter of an hour, he returned, carrying ſome beautiful pieces of white ſpar in his hand, which art could neither imitate nor equal. Upon being informed by him that the place was full of theſe beautiful incruſtations, I ventured in once more with him, for about 50 paces, anxiouſly and cautiouſly deſcending by a ſteep and dangerous way. Finding, however, that we came to a precipice which led into a ſpacious amphitheatre, if I may ſo call it, ſtill deeper than any other part, we returned; and being provided with a ladder, flambeaux, and other things, to expedite our deſcent, our whole company, man by man, ventured into the ſame opening, and, deſcending one after another, we at laſt ſaw ourſelves all together in the moſt magnificent part of the cavern.

"Our candles being now all lighted up, and the whole place completely illuminated, never could the eye be preſented with a more glittering or a more magnifi-

Antiparos. cent ſcene. The roof all hung with ſolid icicles, tranſparent as glaſs, yet ſolid as marble. The eye could ſcarce reach the lofty and noble ceiling; the ſides were regularly formed with ſpars; and the whole preſented the idea of a magnificent theatre, illuminated with an immenſe profuſion of lights. The floor conſiſted of ſolid marble; and in ſeveral places, magnificent columns, thrones, altars, and other objects, appeared, as if nature had deſigned to mock the curioſities of art. Our voices, upon ſpeaking or ſinging, were redoubled to an aſtoniſhing loudneſs; and, upon the firing of a gun, the noiſe and reverberations were almoſt deafening. In the midſt of this grand amphitheatre roſe a concretion of about 15 feet high, that, in ſome meaſure, reſembled an altar; from which, taking the hint, we cauſed maſs to be celebrated there. The beautiful columns that ſhot up round the altar, appeared like candleſticks; and many other natural objects repreſented the cuſtomary ornaments of this ſacrament.

"Below even this ſpacious grotto, there ſeemed another cavern; down which I ventured with my former mariner, and deſcended about 50 paces by means of a rope. I at laſt arrived at a ſmall ſpot of level ground, where the bottom appeared different from that of the amphitheatre, being compoſed of ſoft clay, yielding to the preſſure, and in which I thruſt a ſtick to about ſix feet deep. In this, however, as above, numbers of the moſt beautiful cryſtals were formed; one of which, particularly reſembled a table. Upon our egreſs from this amazing cavern, we perceived a Greek inſcription upon a rock at the mouth; but ſo obliterated by time, that we could not read it. It ſeemed to import, that one Antipater, in the time of Alexander, had come thither; but whether he penetrated into the depths of the cavern, he does not think fit to inform us."

From this account Mr Tournefort's differs conſiderably. Mr Magni mentions only one deſcent or precipice from the entry of the cave to the grotto, or moſt magnificent part; Mr Tournefort ſays that there were many very dangerous precipices and rugged ways, through which they were obliged to paſs ſometimes on their back, and ſometimes on their belly, but gives no particular account of his journey till he come to the grand cavern. This indeed he deſcribes very pompouſly; but as by it he evidently wants to ſupport a favourite hypotheſis, namely, the vegetation of ſtones, perhaps the particulars are not altogether to be depended upon." He, informs us, that, at the entry into the cavern, he met with a Greek inſcription almoſt effaced, containing a good number of proper names; and that there was a tradition among the inhabitants, that theſe were the names of thoſe who had conſpired againſt Alexander the Great, and having miſſed their aim, had taken refuge in this grotto.

The moſt particular account, however, of this famous grotto that hath hitherto been publiſhed, appeared in the Britiſh Magazine, in a letter ſigned *Charles Saunders*, and dated Feb. 24. 1746-7; which, as it is very particular, and ſeems to bear ſufficient marks of authenticity, we ſhall here inſert. "Its entrance lies in the ſide of a rock, about two miles from the ſeaſhore; and is a ſpacious and very large arch, formed of rough craggy rocks, overhung with brambles and a great many climbing plants, that give it a gloominеſs which is very awful and agreeable. Our ſurgeon, myſelf, and four paſſengers, attended by ſix guides with lighted torches, entered this cavern about eight o'clock in the morning, in the middle of Auguſt laſt. We had not gone 20 yards in this cavity when we loſt all ſight of day light: but our guides going before us with lights, we entered into a low narrow kind of alley, ſurrounded every way with ſtones all glittering like diamonds by the light of our torches; the whole being covered and lined throughout with ſmall cryſtals, which gave a thouſand various colours by their different reflections. This alley grows lower and narrower as one goes on, till at length one can ſcarce get along it. At the end of this paſſage we were each of us preſented with a rope, to tie about our middles; which when we had done, our guides led us to the brink of a moſt horrible precipice. The deſcent into this was quite ſteep, and the place all dark and gloomy. We could ſee nothing, in ſhort, but ſome of our guides with torches in a miſerable dark place, at a vaſt diſtance below us. The dreadful depth of this place, and the horror of the deſcent through a miſerable darkneſs into it, made me look back to the lane of diamonds, if I may ſo call it, through which we had juſt paſſed; and I could not but think I was leaving heaven, to deſcend into the infernal regions. The hope of ſomething fine at my journey's end tempted me, however, to truſt myſelf to the rope and my guides at the top, to let myſelf down. After about two minutes dangling in this poſture, not without much pain as well as terror, I found myſelf ſafe, however, at the bottom; and our friends all ſoon followed the example. When we had congratulated here with one another on our ſafe deſcent; I was inquiring where the grotto, as they called it, was. Our guides, ſhaking their heads, told us, we had a great way to that yet; and led us forward about 30 yards under a roof of ragged rocks, in a ſcene of terrible darkneſs, and at a vaſt depth from the ſurface of the earth, to the brink of another precipice much deeper and more terrible than the former. Two of the guides went down here with their torches firſt; and by their light we could ſee, that this paſſage was not ſo perpendicular indeed as the other, but lay in a very ſteep ſlant, with a very ſlippery rock for the bottom; vaſt pieces of rough rugged rocks jutting out in many places on the right hand, in the deſcent, and forcing the guides ſometimes to climb over, ſometimes to creep under them, and ſometimes to round them; and on the left, a thouſand dark caverns, like ſo many monſtrous wells, ready, if a foot ſhould ſlip, to ſwallow them up for ever. We ſtood on the edge to ſee theſe people with their lights deſcend before us; and were amazed and terrified to ſee them continue deſcending till they ſeemed at a monſtrous and moſt frightful depth. When they were at the bottom, however, they hollaed to us; and we, trembling and quaking, began to deſcend after them. We had not gone 30 feet down, when we came to a place where the rock was perfectly perpendicular; and a vaſt cavern ſeemed to open its mouth to ſwallow us up on one ſide, while a wall of rugged rock threatened to tear us to pieces on the other. I was quite diſheartened at this terrible proſpect, and declared I would go back; but our guides aſſured us there was no danger; and the reſt of the company reſolving to ſee the bottom now they were come ſo far, I would not leave them; ſo on we went to a corner where there

Antiparos.

Antiparos. there was placed an old ſlippery and rotten ladder, which hung down cloſe to the rock; and down this, one after another, we at length all deſcended. When we had got to the bottom of this we found ourſelves at the entrance of another paſſage, which was terrible enough indeed; but in this there was not wanting ſomething of beauty. This was a wide and gradual deſcent; at the entrance of which one of our guides ſeated himſelf on his breech, and began to ſlide down, telling us we muſt do the ſame. We could diſcover, by the light of his torch, that this paſſage was one of the nobleſt vaults in the world. It is about nine feet high, ſeven wide, and as for its bottom a fine green glolſy marble. The walls and arch of the roof of this being as ſmooth and even in moſt places as if wrought by art, and made of a fine gliſtering red and white granite, ſupported here and there with columns of a deep blood-red ſhining porphyry, made, with the reflection of the lights, an appearance not to be conceived. This paſſage is at leaſt 40 yards long; and of ſo ſteep a deſcent, that one has enough to do, when ſeated on one's breech, not to deſcend too quickly. Our guides, that we kept with us, could here keep on each ſide of us; and, what with the prodigious grandeur and beauty of the place, our eaſy travelling through it, and the diverſion of our now and then running over one another whether we would or not; this was much the pleaſanteſt part of our journey. When we had entered this paſſage, I imagined we ſhould at the bottom join the two guides we had firſt ſet down; but alas! when we were got there we found ourſelves only at the mouth of another precipice, down which we deſcended by a ſecond ladder not much better than the former. I could have admired this place alſo, would my terror have ſuffered me; but the dread of falling, kept all my thoughts employed during my deſcent. I could not but obſerve, however, as my companions were coming down after me, that the wall, if I may ſo call it, which the ladder hung by, was one maſs of blood-red marble, covered with white ſprigs of rock cryſtal as long as my finger, and making, with the glow of the purple from behind, one continued immenſe ſheet of amethyſts. From the foot of this ladder we ſlided on our bellies through another ſhallow vault of poliſhed green and white marble, about 20 feet: and at the bottom of this joined our guides. Here we all got together once again, and drank ſome rum, to give us courage before we proceeded any farther. After this ſhort refreſhment, we proceeded by a ſtrait, but ſomewhat ſlanting paſſage, of a rough, hard, and ſomewhat coarſe ſtone, full of a thouſand ſtrange figures of ſnakes rolled round, and looking as if alive; but in reality as cold and hard as the reſt of the ſtone, and nothing but ſome of the ſtone itſelf in that ſhape. We walked pretty eaſily along this deſcent for near 200 yards; where we ſaw two pillars ſeemingly made to ſupport the roof from falling in; but in reality it was no ſuch thing; for they were very brittle, and made of a fine glittering yellow marble. When we had paſſed theſe about 200 yards, we found ourſelves at the brink of another very terrible precipice: but this our guides aſſured us was the laſt; and there being a very good ladder to go down by, we readily ventured. At the bottom of this ſteep wall, as I may call it, we found ourſelves for ſome way upon plain even ground; but, after about 40 yards walking, were preſented by our guides with ropes again; which we faſtened about our middles, though not to be ſwung down by, but only for fear of danger, as there are lakes and deep waters all the way from hence on the left hand. With this caution, however, we entered the laſt alley and horrible work it was indeed to get through it. All was perfectly horrid and diſmal here. The ſides and roof of the paſſage were all of black ſtone; and the rocks in our way were in ſome places ſo ſteep, that we were forced to lie all along on our backs, and ſlide down; and ſo rough, that they cut our clothes, and bruiſed us miſerably in paſſing. Over our heads, there was nothing but ragged black rocks, ſome of them looking as if they were every moment ready to fall in upon us; and, on our left hands, the light of our guides torches ſhowed us continually the ſurfaces of dirty and miſerably looking lakes of water. If I had heartily repented of my expedition often before, here I aſſure you I was all in a cold ſweat, and fairly gave myſelf over for loſt; heartily curſing all the travellers that had written of this place, that they had deſcribed it ſo as to tempt people to ſee it, and never told us of the horrors that lay in the way. In the midſt of all theſe reflections, and in the very diſmalleſt part of all the cavern, on a ſudden we had loſt four of our ſix guides. What was my terror on this ſight! The place was a thouſand times darker and more terrible for want of their torches; and I expected no other but every moment to follow them into ſome of theſe lakes, into which I doubted not but they were fallen. The remaining two guides ſaid all they could indeed, to cheer us up; and told us we ſhould ſee the other four again ſoon, and that we were near the end of our journey. I do not know what effect this might have upon the reſt of my companions; but I aſſure you I believed no part of the ſpeech but the laſt, which I expected every moment to find fulfilled in ſome pond or precipice. Our paſſage was by this time become very narrow, and we were obliged to crawl on all-fours over rugged rocks; when in an inſtant, and in the midſt of theſe melancholy apprehenſions, I heard a little hiſſing noiſe, and ſaw myſelf in utter, and not to be deſcribed, darkneſs. Our guides called indeed cheerfully to us, and told us that they had accidentally dropped their torches into a puddle of water, but we ſhould ſoon come to the reſt of them, and they would light them again; and told us there was no danger, and we had nothing to do but to crawl forward. I cannot ſay but I was amazed at the courage of theſe people; who were in a place where, I thought, four of them had already periſhed, and from whence we could none of us ever eſcape; and determined to lie down and die where I was. Words cannot deſcribe the horror, or the extreme darkneſs of the place. One of our guides, however, perceiving that I did not advance, came up to me, and clapping his hand firmly over my eyes, dragged me a few paces forward. While I was in this ſtrange condition, expecting every moment death in a thouſand ſhapes, and trembling to think what the guide meant by this rough proceeding, he lifted me at once over a great ſtone, ſet me down on my feet, and took his hand from before my eyes. What words can deſcribe at that inſtant my aſtoniſhment and tranſport! Inſtead of darkneſs and deſpair, all was ſplendour and magnificence before me: our guides all appeared about us: the place was illuminated by 50

Antipas. torches, and the guides all welcomed me into the grotto of Antipas. The four that were firſt miſſing, I now found had only given us the ſlip, to get the torches lighted up before we came; and the other two had put out their lights on purpoſe, to make us enter out of utter darkneſs into this pavilion of ſplendour and glory. I am now come to the proper buſineſs of this letter: which was to deſcribe this grotto. But I muſt confeſs to you that words cannot do it. The amazing beauties of the place, the eye that ſees them only can conceive. The beſt account I can give you, however, pray accept of.

"The people told us, the depth of this place was 485 yards, the grotto, in which we now were, is a cavern of 120 yards wide, and 113 long, and ſeems about 60 yards high in moſt places. Theſe meaſures differ ſomething from the accounts travellers in general give us; but you may depend upon them as exact, for I took them with my own hand. Imagine then with yourſelf, an immenſe arch like this, almoſt all over lined with fine and bright cryſtallized white marble, and illuminated with 50 torches; and you will then have ſome faint idea of the place I had the pleaſure to ſpend three hours in. This, however, is but a faint deſcription of its beauties. The roof, which is a fine vaulted arch, is hung all over with icicles of white ſhining marble, ſome of them ten feet long, and as thick as one's middle at the root; and among theſe hang a thouſand feſtoons of leaves and flowers, of the ſame ſubſtance; but ſo very glittering, that there is no bearing to look up at them. The ſides of the arch are planted with ſeeming trees of the ſame white marble, riſing in rows one above another, and often encloſing the points of the icicles. From theſe trees there are alſo hung feſtoons, tied as it were from one to another in vaſt quantities; and in ſome places among them there ſeem rivers of marble winding through them in a thouſand meanders. All theſe things are only made, in a long courſe of years, from the dropping of water, but really look like trees and brooks turned to marble. The floor we trod upon was rough and uneven, with cryſtals of all colours growing irregularly out of it, red, blue, green, and ſome of a pale yellow. Theſe were all ſhaped like pieces of ſaltpetre; but ſo hard, that they cut our ſhoes: among theſe, here and there, are placed icicles of the ſame white ſhining marble with thoſe above, and ſeeming to have fallen down from the roof and fixed there; only the big end of theſe is to the floor. To all theſe our guides had tied torches, two or three to a pillar, and kept continually beating them to make them burn bright. You may gueſs what a glare of ſplendour and beauty muſt be the effect of this illumination, among ſuch rocks and columns of marble. All round the lower part of the ſides of the arch are a thouſand white maſſes of marble, in the ſhape of oak trees. Mr Tournefort compares them to cauliflowers, but I ſhould as ſoon compare them to toadſtools. In ſhort, they are large enough to encloſe, in many places, a piece of ground big enough for a bedchamber. One of theſe chambers has a fair white curtain, whiter than ſatin, of the ſame marble, ſtretched all over the front of it. In this we all cut our names, and the date of the year, as a great many people have done before us. In a courſe of years afterwards, the ſtone bliſters out like this white marble over the letters. Mr Tournefort thinks the rock grows like oaks or apple trees for this reaſon; but I remember I ſaw ſome of the fineſt cockle and muſſel ſhells, in the rock thereabouts, that ever I ſaw in my life. I wonder whether he thinks they grow there too. Beſides, if this rock grows ſo faſt, the cavern ought to be all grown up by this time; and yet, according to his meaſures and mine, the cavern ſeems on the other hand to be turned larger ſince. Indeed, all that I can gather from his account of this glorious place is, that he had drank a bottle or two too much before he went down into it." Antipas.

ANTIPAS HEROD, or HEROD-ANTIPAS, the ſon of HEROD the Great, by one of his wives called Cleopatra, a native of Jeruſalem. Herod the Great, in his firſt will, appointed Antipas his ſucceſſor in the kingdom; but afterwards, altering that will, he named his ſon Archelaus his ſucceſſor, giving to Antipas the title only of tetrarch of Galilee and Peræa.

Antipas took a great deal of pains in adorning and fortifying the principal places of his dominions. He married the daughter of Aretas king of Arabia; whom he divorced about the year of Chriſt 33, to marry his ſiſter-in-law Herodias, wife to his brother Philip, who was ſtill living. St John the Baptiſt exclaiming continually againſt this inceſt, was taken into cuſtody by order of Antipas, and impriſoned in the caſtle of Machærus, (Mat. xiv. 3, 4. Mark i. 14. vi. 17, 18. Luke iii. 19, 20.) Joſephus ſays, that Antipas cauſed St John to be laid hold of, becauſe he drew too great a concourſe of people after him; and that he was afraid leſt he ſhould make uſe of the authority which he had acquired over the minds and affections of the people, to induce them to revolt. But the evangeliſts, who were better informed than Joſephus, as being eye witneſſes of what paſſed, and acquainted in a particular manner with St John and his diſciples, aſſures us that the true reaſon of impriſoning St John was, the averſion which Herod and Herodias had conceived againſt him for the liberty he had uſed in cenſuring their ſcandalous marriage. The virtue and holineſs of St John were ſuch that even Herod feared and reſpected him; but his paſſion for Herodias had prevailed with him to have killed that prophet, had he not been reſtrained by his apprehenſions of the people, who eſteemed John the Baptiſt as a prophet. (Mat. xiv. 5, 6.) One day, however, while the king was celebrating the feſtival of his birth, with the principal perſons of his court, the daughter of Herodias danced before him; and pleaſed him ſo well, that he promiſed with an oath to give her whatever ſhe ſhould aſk of him. By her mother's advice ſhe aſked the head of John the Baptiſt: upon which the king commanded John to be beheaded in priſon, and the head to be given her. Aretas, king of Arabia, to revenge the affront which Herod had offered to his daughter, declared war againſt him, and overcame him in a very obſtinate engagement. Herod being afterwards detected as a party in Sejanus's conſpiracy, was baniſhed by the emperor Caius to Lyons in Gaul; whither Herodias accompanied him.

This Antipas is the Herod who, being at Jeruſalem at the time of our Saviour's paſſion (Luke xxiii. 11.), ridiculed him, by dreſſing him in a white robe, and directing him to be conducted back to Pilate, as a mock king, whoſe ambition gave him no umbrage. The time when Antipas died is not known: however, it is certain

Antipater. Antipathy.

certain he died in exile, as well as Herodias. Joſephus ſays, that he died in Spain, whither Cæſar upon his coming to Gaul, the firſt year of his baniſhment, might order him to be ſent.

ANTIPATER, the diſciple of Ariſtotle, and one of Alexander the Great's generals, was a man of great abilities, and a lover of the ſciences; but was accuſed of poiſoning Alexander. He ſubdued the revolted Thracians, relieved Megalopolis, and overthrew the Spartans there. He died 321 years before the Chriſtian era.

ANTIPATER, an Idumean of illuſtrious birth, and poſſeſſed of great riches and abilities, taking advantage of the confuſion into which the two brothers Hyrcanus and Ariſtobulus plunged Judea by their conteſt for the office of high prieſt, took ſuch meaſures as to gain Hyrcanus that office, and under his government to obtain the abſolute direction of all affairs; while his great abilities and application to buſineſs made him ſo conſiderable, that he was honoured as much as if he had been inveſted with the royal authority in form: but he was at laſt poiſoned by a Jew, named Malachus, 43 years before the Chriſtian era. He left among his other children, the famous Herod king of the Jews.

ANTIPATER, *Cælius*, a Roman hiſtorian, who wrote a hiſtory of the Punic war, much valued by Cicero. The emperor Adrian preferred him to Salluſt.

ANTIPATER of Sidon, a Stoic philoſopher, and likewiſe a poet, commended by Cicero and Seneca: he flouriſhed about the 171ſt Olympiad. We have ſeveral of his epigrams in the *Anthologia*.

ANTIPATHY, in *Phyſiology*, is formed from the two Greek words ἀντι *contrary*, and πάθος *paſſion*. Literally taken, the word ſignifies *incompatibility*: but for the moſt part the term *antipathy* is not uſed to ſignify ſuch incompatibilities as are merely phyſical; it is reſerved to expreſs the averſion which an animated or ſenſitive being feels at the real or ideal preſence of particular objects. In this point of view, which is the light in which we at preſent conſider the term, *antipathy*, in common language, ſignifies "a natural horror and deteſtation, an inſuperable hatred, an involuntary averſion, which a ſenſitive being feels for ſome other object, whatever it is, though the perſon who feels this abhorrence is entirely ignorant of its cauſe, and can by no means account for it. Such is, they ſay, the natural and reciprocal hoſtility between the ſalamander and the tortoiſe; between the toad and the weaſel; or between ſheep and wolves. Such is the invincible averſion of particular perſons againſt cats, mice, ſpiders, &c.; a prepoſſeſſion which is ſometimes ſo violent, as to make them faint at the ſight of theſe animals. Of theſe and a thouſand other antipathies the ancient naturaliſts, the ſchoolmen, and the vulgar, form ſo many legends; and relate them as certain facts, that they may demand an explication of them from the philoſophers. But theſe ſages begin with inveſtigating whether ſuch antipathies actually exiſt or not.

To explore the matter without prejudice, we ſhall find it neceſſary to abſtract from the ſubjects of this diſquiſition, 1. All ſuch antipathies as are not aſcertained; as that which is ſuppoſed to be felt by hens at the ſound of an harp whoſe ſtrings are made of a fox's bowels, between the ſalamander and tortoiſe, and between the weaſel and the toad. Nothing is leſs confirmed, or rather nothing is more falſe, than theſe facts, with which vulgar credulity and aſtoniſhment are amuſed and actuated: and though ſome of theſe antipathies ſhould be aſcertained, this would be no proof that the animals which feel them are not acquainted with their cauſes, according to their nature and proportion of knowledge; in which caſe it will be no longer the antipathy which we have defined.

2. We muſt abſtract thoſe antipathies which can be extinguiſhed or removed at pleaſure; thoſe factitious averſions, which certain perſons feel, or pretend to feel, with affected airs, that they may appear more precious and finical, or ſingularly and prodigiouſly elegant; that they may ſeem to have qualities ſo exquiſitely fine, as require to be treated with peculiar delicacy. One who beſtows any attention on the ſubject, would be aſtoniſhed to find how many of theſe chimerical averſions there are, which are pretended, and paſſed upon the world by thoſe who affect them as natural and unconquerable.

3. When we abſtract thoſe averſions the cauſes of which are known and evident; we ſhall be ſurpriſed after our deduction of theſe pretended antipathies from the general ſum, how ſmall, how inconſiderable, is the quantity of thoſe which are conformable to our definition. Will any one pretend to call by the name of *antipathy*, thoſe real, innate, and inconteſtable averſions which prevail between ſheep and wolves? Their cauſe is obvious; the wolf devours the ſheep, and ſubſiſts upon his victims; and every animal naturally flies with terror from pain or deſtruction; ſheep ought therefore to regard wolves with horror, which for their nutrition tear and mangle the unreſiſting prey. From principles ſimilar to this, ariſes that averſion which numbers of people feel againſt ſerpents; againſt ſmall animals, ſuch as reptiles in general, and the greateſt number of inſects. During the credulous and ſuſceptible period of infancy, pains have been taken to impreſs on our minds the frightful idea that they are venomous; that their bite is mortal; that their ſting is dangerous, productive of tormenting inflammations or tumours, and ſometimes fatal: they have been repreſented to us as ugly and ſordid; as being, for that reaſon, pernicious to thoſe who touch them; as poiſoning thoſe who have the misfortune to ſwallow them. Theſe horrible prepoſſeſſions are induſtriouſly inculcated from our infancy; they are ſometimes attended and ſupported by diſmal tales, which are greedily imbibed, and indelibly engraved on our memories. It has been taught us both by precept and example, when others at their approach have aſſumed in our view the appearance of deteſtation and even of terror, that we ſhould fly from them, that we ſhould not touch them. Is it then wonderful (if our falſe impreſſions as to this ſubject have been corrected neither by future reflections nor experiments), that we ſhould entertain, during our whole lives, an averſion for theſe objects, even when we have forgot the admonitions, the converſations, and examples, which have taught us to believe and apprehend them as noxious beings? and in proportion to the ſenſibility of our frame, in proportion as our nerves are irritable, our emotions at the ſight of what we fear will be more violent, eſpecially if they anticipate

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Antipathy. our expectation, and ſeize us unprepared, though our ideas of what we have to fear from them are the moſt confuſed and indiſtinct imaginable. To explain theſe facts, is it neceſſary to fly to the exploded ſubterfuge of occult qualities inherent in bodies, to latent relations productive of antipathies, of which no perſon could ever form an idea?

It is often ſufficient to influence a perſon who had formerly no averſion for an object, if he lives with ſome other aſſociate who gives himſelf up to ſuch capricious panics; the habit is inſenſibly contracted to be agitated with diſagreeable emotions at the preſence of an object which had been formerly beheld with indifference and cold blood. I was acquainted (ſays the author of the article *Antipathy* in the French Encyclopédie) with a perſon of a very ſound underſtanding, whom thunder and lightning by no means terrified; nay, to whom the ſpectacle appeared magnificent and the ſound majeſtic: yet to a mind thus ſeemingly fortified againſt the infectious terror, no more was neceſſary than ſpending the ſummer with a friend in whom the appearance of lightning excited the ſtrongeſt emotions, and whom the remoteſt clap of thunder affected with extravagant paroxyſms, to become timid in exceſs at the approach of thunder; nor could he ever afterwards ſurmount the fear which it inſpired. The frightful ſtories of dogs and cats, which have killed their maſters, or which have given them mortal wounds, are more than ſufficient to inſpire a timorous perſon with averſion againſt theſe animals; and if the olfactory nerves of ſuch a perſon be delicate, he will immediately diſcover the ſmell of them in a chamber: diſturbed by the apprehenſion which theſe effluvia excite in his mind, he gives himſelf up to the moſt violent uneaſineſs, which is tranquillized when he is aſſured that the animal is no longer in the room. If by chance, in the ſearch which is made to calm the uneaſineſs of this timorous perſon, one of theſe creatures ſhould at laſt be diſcovered, every one preſently exclaims, *A miracle!* and admits the reality of *antipathies* into his creed; whilſt all this is nothing but the effect of a childiſh fear, founded on certain confuſed and exaggerated ideas of the hazard which one may run with theſe animals. The *antipathy* which ſome people entertain againſt eels, though they are eaten by others with pleaſure, ariſes from nothing but the fear of ſerpents, to which theſe fiſhes are in ſome degree ſimilar. There are likewiſe other *antipathies* which do not originate in the imagination, but ariſe from ſome natural incongruity; ſuch as we often remark in children, for particular kinds of victuals, with which their taſte is not offended, but which their ſtomachs cannot digeſt, and which are therefore diſgorged as ſoon as ſwallowed.

To what then are thoſe *antipathies*, of which we have heard ſo much, reducible! Either to legendary tales; or to averſions againſt objects which we believe dangerous; or to a childiſh terror of imaginary perils; or to a diſreliſh, of which the cauſe is diſguiſed; or to a ridiculous affectation of delicacy; or to an infirmity of the ſtomach; in a word, to a real or pretended reluctance for things which are either inveſted, or ſuppoſed to be inveſted with qualities hurtful to us. Too much care cannot be taken in preventing, or regulating, the *antipathies* of children; in familiarizing them with objects of every kind; in diſcovering to them, without emotion, ſuch as are dangerous; in teaching them the means of defence and ſecurity, or the methods of eſcaping their noxious influence: and, when the rational powers are matured by age, in reflecting on the nature of thoſe objects which we fear, in aſcertaining what has been told concerning their qualities, or in vigorouſly operating upon our own diſpoſitions to overcome thoſe vain repugnancies which we may feel. See SYMPATHY, which is the oppoſite of *Antipathy*. Antipathy Antiphony.

ANTIPATHY, in *Ethics*, hatred, averſion, repugnancy. *Hatred* is entertained againſt perſons; *averſion*, and *antipathy*, indiſcriminately againſt perſons or things; and *repugnancy* againſt actions alone.

Hatred is more voluntary than *averſion*, *antipathy*, or *repugnancy*. Theſe laſt have greater affinity with the animal conſtitution. The cauſes of ANTIPATHY are leſs known than thoſe of *averſion*. *Repugnancy* is leſs permanent than either the one or the other. We hate a vicious character, we feel *averſion* to its exertions: we are affected with ANTIPATHY for certain perſons at firſt ſight; there are ſome affairs which we tranſact with *repugnancy*.—*Hatred* calumniates; *averſion* keeps us at a diſtance from certain perſons: ANTIPATHY makes us deteſt them; *repugnancy* hinders us from imitating them.

ANTIPATRIS (Acts xxiii. 31.), a town of Paleſtine, anciently called *Caphar Saba*, according to Joſephus, but named *Antipatris* by Herod the Great, in honour of his father Antipater. It was ſituated in a pleaſant valley near the mountains, in the way from Jeruſalem to Cæſarea. Joſephus places it at about the diſtance of ſeventeen miles from Joppa.

ANTIPELARGIA, among the ancients, a law, whereby children are obliged to furniſh neceſſaries to their aged parents. The ciconia, or ſtork, is a bird famous for the cares it takes of its parents when grown old. Hence, in ſome Latin writers, this is rendered *lex ciconiaria*, or the ſtork's law.

ANTIPHONARY, ANTIPHONARIUM, a ſervice book, which contained all the invitatories, reſponſories, collects, and whatever elſe was ſung or ſaid in the choir, except the leſſons. This is otherwiſe called *reſponſarium*, from the reſponſes therein contained. The author of the Roman *antiphonary* was Pope Gregory the Great. We alſo find mention of nocturnal and diurnal *antiphonaries*, for the uſe of the daily and nightly offices; ſummer and winter *antiphonaries*; alſo *antiphonaries* for country churches, &c. By the provincial conſtitutions of Archbiſhop Winchelſey, made at Merton, A. D. 1305, it is required that one of theſe ſhould be found in every church within the province of Canterbury. The uſe of theſe, and many other popiſh books, was forbid by the 3d and 4th of Edward VI. c. 10.

ANTIPHONY, the anſwer made by one choir to another, when the pſalm or anthem is ſung between two.

ANTIPHONY ſometimes denotes a ſpecies of pſalmody, wherein the congregation being divided into two parts, repeat the pſalms, verſe for verſe, alternately. In this ſenſe, antiphony ſtands contradiſtinguiſhed from ſymphony, where the whole congregation ſings together.

Antiphony differs from reſponſorium, becauſe in this latter the verſe is only ſpoken by one perſon, where-

Antiphony || Antiquare.

as in the former, the verſes are ſung by the two choirs alternately. The original of antiphonal ſinging in the weſtern churches is referred to the time of St Ambroſe, about the year 374. That father is ſaid to have firſt introduced it into the church of Milan, in imitation of the cuſtom of the eaſtern church, where it appears to be of greater antiquity, though as to the time of its inſtitution, authors are not agreed; it was moſt probably introduced at Antioch, between the year of Chriſt 347 and 356.

ANTIPHONY is alſo uſed to denote the words given out at the beginning of the pſalm, to which both the choirs are to accommodate their ſinging.

ANTIPHONY, in a more modern ſenſe, denotes a kind of compoſition made of ſeveral verſes extracted out of different pſalms, adapted to expreſs the myſtery ſolemnized on the occaſion.

ANTIPODES, in *Geography*, a name given to thoſe inhabitants of the globe that live diametrically oppoſite to each other. The word is Greek, and compounded of *αντι*, *oppoſite*, and *πους*, *a foot*; becauſe their feet are oppoſite to each other.

The antipodes lie under oppoſite meridians and oppoſite parallels; in the ſame degree of latitude, but of oppoſite denominations, one being north and the other ſouth. They have nearly the ſame degree of heat and cold, days and nights of equal length, but in oppoſite ſeaſons. It is noon to one when midnight to the other; and the longeſt day with the one is the ſhorteſt with the other.

Plato is eſteemed the firſt who thought it poſſible that the antipodes ſubſiſted, and is looked upon as the inventor of the word. As this philoſopher apprehended the earth to be ſpherical, he had only one ſtep to make to conclude the exiſtence of the antipodes.

The ancients, in general, treated this opinion with the higheſt contempt; never being able to conceive how men and trees could ſubſiſt ſuſpended in the air with their feet upwards, for ſo they apprehended they muſt be in the other hemiſphere.

They never reflected that theſe terms *upwards* and *downwards* are merely relative; and ſignify only nearer to, or farther from, the centre of the earth, the common centre to which all heavy bodies gravitate; and that, therefore, our antipodes have not their feet upwards and head downwards any more than ourſelves; becauſe they, like us, have their feet nearer the centre of the earth, and their heads farther from it. To have the head downwards and feet upwards, is to place the body in a direction of gravity tending from the feet to the head: but this cannot be ſuppoſed with regard to the antipodes; for they, like us, tend toward the centre of the earth, in a direction from head to foot.

ANTIPOLIS, in *Ancient Geography*, now ANTIBES, on the coaſt of Provence, a colony of the Maſſilians, near the river Verus, in Gallia Narbonenſis (Livy), three leagues to the weſt of Nice. E. Long. 7. N. Lat. 43. 40.

ANTIQUARE, among Roman lawyers, properly denotes the rejecting of a new law, or refuſing to paſs it. In which ſenſe, *antiquating* differs from *abrogating*; as the latter imports the annulling an old law, the former the rejecting a new one.

ANTIQUARE is alſo uſed for a law's growing obſolete, or into diſuſe, either by age or non-obſervance.

ANTIQUARII, a name given to copiers of old manuſcript books. After the decline of learning amongſt the Romans, and when many religious houſes were erected, learning was chiefly in the hands of the clergy: the greateſt number of whom were regulars, and lived in monaſteries. In theſe houſes were many induſtrious men who were continually employed in making new copies of old books, either for the uſe of the monaſtery or for their own emolument. Theſe writing monks were diſtinguiſhed by the name of *Antiquarii*. They deprived the poor librarii, or common ſcriptores, of great part of their buſineſs, ſo that theſe found it difficult to gain a ſubſiſtence for themſelves and families. This put them upon finding out more expeditious methods of tranſcribing books. They formed the letters ſmaller, and made uſe of more jugations and abbreviations than had been uſual. They proceeded in this manner till the letters became exceedingly ſmall; the abbreviations were very numerous, and extremely difficult to be read. This in ſome meaſure accounts for the great variety of hands in the ſpecies of writing called *Modern Gothic*. When a number of copies were to be made of the ſame work, it was uſual to employ ſeveral perſons at the ſame time in writing it; each perſon, except him who wrote the firſt ſkin, began where his fellow was to leave off.

ANTIQUARY, a perſon who ſtudies and ſearches after monuments and remains of antiquity; as old medals, books, ſtatues, ſculptures, and inſcriptions; and, in general, all curious pieces that may afford any light into antiquity.

In the chief cities of Greece and Italy, there were perſons of diſtinction called *antiquaries*, whoſe buſineſs it was to ſhow ſtrangers the antiquities of the place, to explain the ancient inſcriptions, and to give them all the aſſiſtance they could in this way of learning.—Pauſanias calls theſe antiquaries Εξηγηται. The Sicilians call them *myſtagogi*.

There was an ancient college of antiquaries erected in Ireland by Ollamh Fodhla, 700 years before Chriſt, for compoſing a hiſtory of that country: And to this, ſay the Iriſh hiſtorians, it is owing that the hiſtory and antiquities of that kingdom may be traced back beyond thoſe of moſt other nations.

There is a ſociety of antiquaries in London, and another in Edinburgh, incorporated by the king's charter. See SOCIETY.

ANTIQUARY is alſo uſed by ancient writers for the keeper of the antiquarium or cabinet of antiquities. This officer is otherwiſe called *archæota*, or antiquary of a king, a prince, a ſtate, or the like.

Henry VIII. gave John Leland the title of his *antiquary*; a title which, ſays the author of his life, nobody ever enjoyed beſides himſelf. But the reſtriction, we ſuppoſe, was only intended to be underſtood in reſpect of the kings of England. M. Schott, we find, had the title of *antiquary* to the king of Pruſſia; P. Pedruzzi, that of *antiquary* of the duke of Parma; M. Galland reſided ſome time in Turkey under the title of *antiquary* of the king of France.—The univerſity of Oxford have ſtill their antiquary under the denomination of *cuſtos archivorum*.—The kings of Sweden have been at great expences in order to illuſtrate the antiquity of their country, having eſtabliſhed an academy of antiquaries with this ſingle view.—The office

Antiquated || Antiquities.

of the ancient Iriſh antiquaries was to preſerve the genealogies of the kings of Ireland, to correct the regal tables of ſucceſſion, and deliver down the pedigree of every collateral branch of the royal family.

ANTIQUATED, ſomething obſolete, out of date, or out of uſe.

ANTIQUE, in a general ſenſe, ſomething that is ancient: but the term is chiefly uſed by ſculptors, painters, and architects, to denote ſuch pieces of their different arts as were made by the ancient Greeks and Romans. Thus we ſay, an antique buſt, an antique ſtatue, &c.

ANTIQUE is ſometimes contradiſtinguiſhed from *ancient*, which ſignifies a leſs degree of antiquity. Thus, antique architecture is frequently diſtinguiſhed from ancient architecture.

ANTIQUITIES, a term implying all teſtimonies, or authentic accounts, that have come down to us, of ancient nations. Bacon calls antiquities *the wrecks of hiſtory*, or ſuch particulars as induſtrious and learned perſons have collected from genealogies, inſcriptions, monuments, coins, names, etymologies, archives, inſtruments, fragments of hiſtory, &c.

Antiquities form a very extenſive ſcience, including "an hiſtorical knowledge of the edifices, magiſtrates, offices, habiliments, manners, cuſtoms, ceremonies, worſhip, and other objects worthy of curioſity, of all the principal ancient nations of the earth."

This ſcience is not a matter of mere curioſity, but is indiſpenſable to the theologian; who ought to be thoroughly acquainted with the antiquities of the Jews, to enable him properly to explain numberleſs paſſages in the Old and New Teſtaments: to the lawyer, who, without the knowledge of the antiquities of Greece and Rome, can never well underſtand and properly apply the greateſt part of the Roman laws: to the phyſician and the philoſopher, that they may have a complete knowledge of the hiſtory and principles of the phyſic and philoſophy of the ancients: to the critic, that he may be able to underſtand and interpret ancient authors: to the orator and poet; who will be thereby enabled to ornament their writings with numberleſs images, alluſions, compariſons, &c.

Antiquities are divided into ſacred and profane, into public and private, univerſal and particular, &c. It is true, that the antiquaries (eſpecially ſuch as are infected with a ſpirit of pedantry, and the number of theſe is great) frequently carry their inquiries too far, and employ themſelves in laborious reſearches after learned trifles; but the abuſe of a ſcience ought never to make us neglect the applying it to rational and uſeful purpoſes.

Many antiquaries alſo reſtrain their learned labours to the eclairciſſement of the antiquities of Greece and Rome: but this field is far too confined, and by no means contains the whole of this ſcience, ſeeing it properly includes the antiquities of the Jews, Egyptians, Perſians, Phœnicians, Carthaginians, Hetruſcans, Germans, and, in general, all thoſe principal nations mentioned in ancient hiſtory: ſo far as any accounts of them are come down to us.

If to the general ſubjects above mentioned we add the particular ſtudy of antiques, of the ſtatues, baſs-reliefs, and the precious relicks of architecture, painting, camaieus, medals, &c. it is eaſy to conceive that antiquities form a ſcience very extenſive and very complicated, and with which only a very ſmall acquaintance could have been attainable by any one man, if our predeceſſors had not prepared the way for us; if they had not left us ſuch ineſtimable works as thoſe of Gronovius, Grævius, Montfaucon, Count Caylus, Winckelman, the Hebraic antiquities of D. Iken of Bremen, the Grecian antiquities of Brunnings, the Roman antiquities of Nieupoort, and eſpecially that work which is entitled *Bibliographia Antiquaria Joh. Alberti Fabricii*, profeſſor at Hamburgh, &c. &c. Nor muſt we here forget that very valuable work, with which our countryman Mr Robert Wood has lately enriched this ſcience, and which is ſo well known, and ſo juſtly eſteemed by all true connoiſſeurs, under the title of the *Ruins of Palmyra*, and thoſe of *Baalbec*. It is by this work that we are fully convinced of the grandeur and magnificence, the taſte and elegance, of the buildings of the ancients. We here ſee that the invention of theſe matters is not all owing to the Greeks, but that there were other nations who ſerved them as models. For though many of the edifices of Palmyra are to be attributed to the emperor Aurelian, and to Odenatus and his wife Zenobia, who reigned there about the year 264, yet there are found at the ſame place ruins of buildings that appear to be of far greater antiquity, and that are not leſs beautiful. The ancient Perſepolis is ſufficient to prove this aſſertion. When we duly reflect on all theſe matters, and eſpecially if we attempt to acquire any knowledge of this ſcience, we ſhall ſoon be convinced that it but ill becomes a petit-maitre to laugh at a learned antiquary.

Antiquities.

The knowledge of thoſe monuments of the ancients, the works of ſculpture, ſtatuary, graving, painting, &c. which they call *antiques*, requires a ſtrict attention with regard to the matter itſelf on which the art has been exerciſed; as the wax, clay, wood, ivory, ſtones of every kind, marble, flint, bronze, and every ſort of metal. We ſhould begin by learning on what matter each ancient nation principally worked, and in which of the fine arts they excelled: For the matter itſelf, as the different ſorts of marble, compoſitions of metals, and the ſpecies of precious ſtones, ſerve frequently to characterize the true antique, and to diſcover the counterfeit. The connoiſſeurs pretend alſo to know, by certain diſtinct characters in the deſign and execution of a work of art, the age and nation where it was made. They find, moreover, in the invention and execution, a degree of excellence which modern artiſts are not able to imitate. Now, though we ought to allow, in general, the great merit of the ancients in the polite arts, we ſhould not, however, ſuffer our admiration to lead us into a blind ſuperſtition. There are pieces of antiquity of every ſort, which have come down to us; ſome that are perfectly excellent; and others ſo wretched, that the meaneſt among modern artiſts would not acknowledge them. The mixture of the good and bad has taken place in all ſubjects, at all times and in all nations. The misfortune is, that moſt of our great antiquaries have been ſo little ſkilled in deſigning as ſcarcely to know how to draw a circle with a pair of compaſſes. It is prejudice, therefore, which frequently directs them to give the palm to the ancients, rather than a judgment directed by a knowledge of the art. That character

Antiquity of expreſſion which they find ſo marvellous in the works of antiquity, is often nothing more than a mere chimera. They pretend that the artiſts of our days conſtantly exaggerate their expreſſions; that a modern Bacchus has the appearance of a man diſtracted with intoxication; that a Mercury ſeems to be animated with the ſpirit of a fury; and ſo of the reſt. But let them not decide too haſtily. Almoſt all the antique figures are totally void of all ſpirit of expreſſion; we are forced to gueſs at their characters. Every artificial expreſſion requires, moreover, to be ſomewhat exaggerated. A ſtatue or portrait is an inanimate figure; and muſt therefore have a very different effect from one which, being endowed with life, has the muſcles conſtantly in play, and where the continual change of the features, the motion of the eyes, and the looks more or leſs lively, eaſily and clearly expreſs the paſſions and ſentiments. Whereas, in a figure, that is the produce of art, the delicate touches, that ſhould expreſs the paſſions, are loſt to the eyes of the ſpectators: they muſt therefore be ſtruck by ſtrong bold characters, which can affect them at the firſt glance of the eye. A very moderate artiſt is ſenſible, at the ſame time, that he is not to give his figures extravagant expreſſions, or to place them in diſtorted attitudes.

Antiſeptics.

ANTIQUITY ſignifies times or ages paſt long ago. Thus, we ſay, the heroes of antiquity, &c.

ANTIQUITY is alſo uſed to denote the works or monuments of antiquity. See ANTIQUITIES.

ANTIQUITY likewiſe expreſſes the great age of a thing; and in this ſenſe we ſay, the antiquity of a family, the antiquity of a kingdom.

ANTIRRHINUM, SNAP-DRAGON, or CALVES SNOUT. See BOTANY *Index*.

ANTIRRHIUM, in *Ancient Geography*, a promontory at the mouth of the Corinthian bay, where it is ſcarce a mile broad, and where it ſeparates Ætolia from the Peloponneſus; ſo called from its oppoſite ſituation to Rhium in Peloponneſus (Pliny): both are now called the *Dardanelles of Lepanto*.

ANTISABBATARIANS, a modern religious ſect who oppoſe the obſervance of the Chriſtian ſabbath. The great principle of the Antiſabbatarians is, that the Jewiſh ſabbath was only of ceremonial, not moral obligation; and conſequently is aboliſhed by the coming of Chriſt.

ANTISAGOGE, in *Rhetoric*, a figure differing little from that called *conceſſion*. The following paſſage from Cicero is an inſtance of it: *Difficilis ratio belli gerendi; at plena fidei, plena pietatis: et ſi dicas, magnus labor, multa pericula proponuntur; at gloria ex his immortalis eſt conſecutura.* See CONCESSION.

ANTISCII, in *Geography*, people who live on different ſides of the equator, whoſe ſhadows at noon are projected oppoſite ways. Thus the people of the north are Antiſcii to thoſe of the ſouth: the one projecting their ſhadows at noon towards the north pole, and the other toward the ſouth pole.

ANTISCORBUTICS, medicines good in ſcorbutic caſes.

ANTISEPTICS (from ἀντι and σηπτος *putrid*, of σηπω *to putrify*), an appellation given to ſuch ſubſtances as reſiſt putrefaction.

We have ſome curious experiments in relation to antiſeptic ſubſtances by Dr Pringle, who has aſcertained their ſeveral virtues. Thus, in order to ſettle the antiſeptic virtue of ſalts, he compared it with that of common ſea ſalt; which being one of the weakeſt, he ſuppoſes equal to unity, and expreſſes the proportional ſtrength of the reſt by higher numbers, as in the following table.

Antiſeptics.

Salts, their antiſeptic virtue.

Sea ſalt	1	Saline mixture	3
Sal gemmæ	1+	Nitre	4+
Tartar vitriolated	2	Salt of hartſhorn	4+
Spiritus Mindereri	2	Salt of wormwood	4+
Tartarus ſolubilis	2	*Borax*	12+
Sal diureticus	2+	Salt of amber	20+
Crude *ſal ammoniac*	3	Alum	30+

In this table the proportions are marked in integral numbers: only to ſome there is added the ſign +, to ſhow, that thoſe ſalts are poſſeſſed of a ſtronger antiſeptic virtue than the number in the table expreſſes, by ſome fractions: unleſs in the three laſt, where the ſame ſign imports that the ſalt may be ſtronger by ſome units.

Some reſinous and other ſubſtances even exceed the antiſeptic virtues of the neutral ſalts; thus myrrh, aſafœtida, terra japonica, and aloes, are at leaſt 12 times more antiſeptic than ſea ſalt. Two grains of camphor are equivalent to 60 grains of that ſalt. An infuſion of a few grains of Virginian ſnake-root, in powder, exceeds 12 times its weight of ſea ſalt. Chamomile flowers have nearly the ſame extraordinary quality. The Jeſuits bark has it alſo. Beſides theſe, pepper, ginger, ſaffron, contrayerva root, are 12 times more antiſeptic than ſea ſalt. Dried ſage, rhubarb, the root of the wild valerian, mint, angelica, ground ivy, ſenna, green tea, red roſes, wormwood, muſtard, and horſe radiſh, were likewiſe found more antiſeptic than the ſtandard.

To the claſs of antiſeptic medicines may likewiſe be added fermented liquors, acids, ſpirits, and even thoſe plants called *anti-acids*, and erroneouſly ſuppoſed haſteners of putrefaction, particularly horſe radiſh. Now vegetables, poſſeſſing this virtue, are the more valuable, in that being uſually free of acrimony, they may be taken in much greater quantities than either ſpirits, acids, reſins, or even the neutral ſalts.

Antiſeptics are preſcribed in all putrid, malignant, and peſtilential caſes. It is to be remarked, however, that different kinds of them are to be given in different diſeaſes, and even in different ſtages of the ſame diſeaſe. Thus, the bark is a ſpecific in gangrene, when the veſſels are relaxed, and the blood reſolved or diſpoſed to putrefaction; but will fail, if the veſſels are too full, or the blood be too thick. With the ſame caution is the bark to be uſed in wounds, viz. chiefly in caſes of abſorbed matter, when it infects the humours, and brings on a hectic fever.

By the great antiſeptic virtue of alum, the bark, and other aſtringents, it ſhould ſeem, that aſtriction had no ſmall ſhare in the cure of putrid diſorders; and, indeed, the very nature of putrefaction conſiſts in a ſeparation or diſunion of the parts. But as aſtringents are improper to be adminiſtered in many caſes, contrayer-

Antiſpaſmodics || Antitactæ.

va root, ſnake root, camphor, &c. may ſupply their place; which, though highly antiſeptic, have very little, or any, of an aſtringent quality.

ANTISPASMODICS, are medicines proper for the cure of ſpaſms and convulſions. Opium, balſam of Peru, and the eſſential oils of many vegetables, are the principal in this claſs of medicines. Opium excels, for its immediate effects. Peruvian balſam, in many inſtances, produces more laſting benefit than opium, and ſometimes ſucceeds where opium fails. As antiſpaſmodics, the eſſential oils differ in this from opium, that they act more on a particular part than on the ſyſtem in general, and have no ſoporific effect. Some medicines remove ſpaſms by immediate contact, as aſſes milk, cream, oil of almonds; others by repelling heat, as gas, ſulphur, nitre, ſal ammoniac, &c. And where the ſtrictures are produced by inanition and a defect of vital heat, ſpaſms are removed by thoſe medicines that reſtore the *vis vitæ*, ſuch as valerian, caſtor, muſk, &c.

ANTISTASIS, in *Oratory*, a defence of an action from the conſideration that had it been omitted worſe would have enſued. This is called by Latin writers *comparativum argumentum*; ſuch, *e. g.* would be the general's defence who had made an inglorious capitulation, That, without it, the whole army muſt have periſhed.

ANTISTHENES, a Greek philoſopher, and founder of the Cynics. He was born at Athens, and paſſed the former part of his life as a ſoldier. Having afterwards been an attendant at the lectures of Socrates, he was principally charmed with thoſe exhortations of that great philoſopher, which perſuaded to frugality, to temperance, and to moderation; theſe Antiſthenes was reſolved to practice by carrying every precept to its utmoſt extent. Permitting therefore his beard to grow, he went about the ſtreets in a thread-bare coat, ſcarcely to be diſtinguiſhed from a common beggar. He prided himſelf upon the moſt rigid virtue, and thought himſelf obliged to attack the vicious wherever he found them. This gave him ſome reputation in the city; but it may be ſuppoſed, that, in a place ſo very luxurious as Athens, he had more enemies than diſciples. His philoſophy conſiſted rather in action than ſpeculation: it was therefore his conſtant maxim, That to be virtuous was to be happy, and that all virtue conſiſted in action; that the wiſe man ſhould live for himſelf, contented in all ſituations, and happy alone in the conſciouſneſs of his own virtue. He acknowledged nothing to be good but what was honourable; and aſſerted, that virtue might be acquired by practice. Laertius tells us there were 10 tomes of his works; and he has given us many of his apophthegms.

ANTISTOCHEON, in *Grammar*, the uſing one letter inſtead of another: as *olli* for *illi*.

ANTISTROPHE, in *Grammar*, a figure by which two things mutually depending on one another, are reciprocally converted; as, *the ſervant of the maſter, the maſter of the ſervant.*

ANTISTROPHE, among lyric poets, that part of a ſong and dance in uſe among the ancients, which was performed before the altar, in returning from weſt to eaſt; in oppoſition to ſtrophe. See STROPHE and ODE.

ANTITACTÆ, in church hiſtory, a branch of Gnoſtics, who held, that God was good and juſt, but that a creature had created evil; and conſequently that it is our duty to oppoſe this author of evil, in order to avenge God of his adverſary. Antithenar || Antitype.

ANTITHENAR, in *Anatomy*, a name given to the adductor indicis. See ANATOMY, *Table of the Muſcles.*

ANTITHESIS, in *Rhetoric*, a contraſt or oppoſition of words or ſentiments. Such is that of Cicero, in the ſecond Catilinarian: "On one ſide ſtands modeſty, on the other impudence; on one fidelity, on the other deceit; here piety, there ſacrilege; here continency, there luſt, &c." Such alſo is that of Auguſtus to ſome ſeditious young men, *Audite, juvenes, ſenem, quem juvenem ſenes audivere.* Such again is that of Seneca: *Curæ læves loquuntur, ingentes ſtupent.* And that of Virgil:

Flectere ſi nequeo ſuperos, Acheronta movebo.

St Auguſtine, Seneca, Salvian, and many other ancient writers, ſeem greatly to affect antitheſes; but among the moderns they are generally decried. Deſmaretz repreſents them as the favourites of young writers. The following is an example of modern antitheſis.

———Though gentle, yet not dull;
Strong, without rage; without o'erflowing, full.

ANTITHESIS is ſometimes uſed for controverſy. In this ſenſe, we meet with *antithetic* method, *antithetic* diſcourſes, &c. Marcion compoſed a volume of Antitheſes, or contrarieties and oppoſitions between the law and the goſpel.

ANTITRAGUS MUSCULUS, in *Anatomy*, a muſcle of the ear. See ANATOMY, *Table of the Muſcles.*

ANTITRINITARIANS, thoſe who deny the trinity, and teach that there are not three perſons in the Godhead. Thus the Samoſatenians who do not believe the diſtinction of perſons in God; the Arians, who deny the divinity of the Word, and the Macedonians who deny that of the Holy Spirit, are all properly Antitrinitarians. Among the moderns, Antitrinitarians are particularly underſtood of Socinians, called alſo Unitarians.

The *Bibliotheca Antitrinitariorum*, or *Antitrinitarian Library*, is a poſthumous work of Chriſtopher Sandius, an eminent Antitrinitarian; wherein he gives a liſt, digeſted in order of time, of all the Socinian or modern Antitrinitarian authors, with a brief account of their lives, and a catalogue of their works. See UNITARIAN.

ANTITYPE, a Greek word, properly ſignifying a type or figure correſponding to ſome other type.

The word antitype occurs twice in the New Teſtament; viz. in the epiſtle to the Hebrews, ix. 24. and in St Peter, 1 Eph. iii. 21. where its genuine import has been much controverted. The former ſays, that "Chriſt is not entered into the holy places made with hands, which are, ἀντίτυπα, the figures or antitypes of the true—now to appear in the preſence of God for us." Now τύπος ſignifies the pattern by which another thing is made; and as Moſes was obliged to make the tabernacle, and all things in it, according to the pattern ſhown him in the mount: the tabernacle ſo formed was the antitype of what was ſhown to Moſes: any thing, therefore, formed according to a model or pattern,

Antium || Antoine.

tem, is an antitype. In the latter paſſage, the apoſtle ſpeaking of Noah's flood, and the deliverance only of eight perſons in the ark from it, ſays, Ω και ημας αντιτυπον νυνσωζει βαπτισμα, *Baptiſm being an anſwer to that, now ſaves us; not putting away the filth of the fleſh, but the anſwer of a good conſcience towards God*, &c. The meaning is, that righteouſneſs, or the anſwer of a good conſcience towards God, now ſaves us by means of the reſurrection of Chriſt, as formerly righteouſneſs ſaved theſe eight perſons by means of the ark, during the flood. The word antitype, therefore, here ſignifies a general ſimilitude of circumſtances; and the particle ω, *whereunto*, refers, not to the immediate antecedent, υματος, *water*, but to all that precedes.

ANTITYPE, among the ancient Greek fathers, and in the Greek liturgy, is alſo applied to the ſymbols of bread and wine in the ſacrament. Hence it hath been argued, by many Proteſtants, that the Greeks do not really believe the doctrine of tranſubſtantiation; becauſe they call the bread and wine *antitypes*, αντιτυπα, q. d. figures, ſimilitudes; and this even after the conſecration.

ANTIUM, in *Ancient Geography*, a city of the Volſci, (Livy); ſituated on the Tuſcan ſea, yet without a harbour, becauſe they had a neighbouring hamlet called *Ceno*, with a harbour, (Strabo). The Romans gained their firſt reputation in naval affairs againſt the Antiates; part of whoſe ſhips they conveyed into the arſenal of Rome, and part they burnt; and with their beaks or roſtra adorned the pulpit erected in the forum, thence called *Roſtra*, (Livy, Florus.) Here ſtood a famous temple of Fortune, (Horace). Addiſon ſays, there were two Fortunæ worſhipped at Antium.—It is now extinct, but the name ſtill remains in the *Capo d'Anzo*.

ANTIVARI, a ſtrong town of Turkey in Europe, in Dalmatia, a Greek archbiſhop's ſee, and ſubject to the Turks. E. Long. 29. 15. N. Lat. 43. 0.

ANTIVIRGILIAN HUSBANDRY, an appellation given to Mr Tull's new method of horſe-hoeing huſbandry. See AGRICULTURE.

ANTLER, among ſportſmen, a ſtart or branch of a deer's attire.

Brow-Antler, denotes the branch next the head; and,

Bes-Antler, the branch next above the brow-antler.

ANTLIA, an ancient machine, ſuppoſed to be the ſame with our pump. Hence the phraſe *in antliam condemnari*, according to the critics, denotes a kind of puniſhment whereby criminals were condemned to drain ponds, ditches, or the like.

ANTOECI, in *Geography*, thoſe inhabitants of the earth who live under the ſame meridian, and at the ſame diſtance from the equator: the one toward the north, and the other toward the ſouth. Hence they have the ſame longitude: and their latitude is alſo the ſame, but of a different denomination. They are in the ſame ſemicircle of the meridian, but in oppoſite parallels. They have preciſely the ſame hours of the day and night, but oppoſite ſeaſons; and the night of the one is always equal to the day of the other.

ANTOINN, a town of France, in Dauphiny, in the diocefe of Vienne, with a celebrated abbey. It is ſeated among the mountains, 13 miles eaſt of Lyons. E. Long. 5. 20. N. Lat. 45. 43.

Antona || Antonides

ANTONA, (Tacitus); a river of Britain, which Camden ſuppoſes to be a faulty reading for Avona or Aufona, (the Avon)

ANTONACUM, ANTONNACUM, or ANTUNNACUM, a town of the Treviri; now *Andernach*, below Coblentz. E. Long. 7. 5. N. Lat. 5 . 25.

ANTONIA, a citadel of Jeruſalem, the origin of which we have in Joſephus: who ſays, that Hircanus, the firſt high-prieſt of that name, built Baris near the temple, a houſe with turrets, where he generally reſided. Herod afterwards made it ſtronger, for the ſecurity and defence of the temple; and in honour of Mark Antony, who then commanded in the eaſt, called it *Antonia*. It was very extenſive, and could accommodate a Roman legion: from it there was a full view of the temple.

ANTONIA, *Saint*, a town of France, in Rouergue, in the dioceſe of Rhodez, whoſe fortifications are demoliſhed. It is ſeated on the river Aveiron. E. Long. 0. 55. N. Lat. 44. 10.

ANTONIAN WATERS, medicinal waters of Germany, very pleaſant to the taſte, and eſteemed good in many chronic and hypochondriac caſes. See TONSTEIN.

ANTONIANO, SILVIO, a man of great learning, who raiſed himſelf from a low condition by his merit, was born at Rome in the year 1540. When he was but ten years old, he could make verſes upon any ſubject propoſed to him; and theſe ſo excellent, though pronounced extempore, that even a man of genius could not compoſe the like without a good deal of time and pains. The duke of Ferrara coming to Rome, to congratulate Marcellus II. upon his being raiſed to the pontificate, was ſo charmed with the genius of Antoniano, that he carried him to Ferrara, where he provided able maſters to inſtruct him in all the ſciences. From thence he was ſent for by Pius IV. who made him profeſſor of the belles lettres in the college at Rome. Antoniano filled this place with ſo much reputation, that, on the day when he began to explain the oration *pro Marco Marcello*, he had a vaſt crowd of auditors, and among theſe no leſs than 25 cardinals. He was afterwards choſen rector of the college; and after the death of Pius IV. being ſeized with a ſpirit of devotion, he joined himſelf to Philip Neri, and accepted the office of ſecretary to the ſacred college, offered him by Pius V. which he executed for 25 years with the reputation of an honeſt and able man. He refuſed a biſhopric which Gregory XIV. would have given him; but he accepted the office of ſecretary to the briefs, offered him by Clement VIII. who made him his chamberlain, and afterwards a cardinal. Antoniano killed himſelf by too great fatigue: for he ſpent whole nights in writing letters; which brought on a ſickneſs, whereof he died, in the 63d year of his age. He wrote with ſuch eaſe and fluency, that he never almoſt made any blot or raſure; and it is ſaid of him, that he preſerved the flower of his virginity during his whole life.

ANTONIDES VANDER GOES, JOHN, an eminent Dutch poet, born at Goes in Zealand, the 3d of April 1647. His parents were Anabaptiſts, people of good character, but of low circumſtances. They went to live at Amſterdam when Antonides was about four years old;

Antonides. Antonius.

old; and, in the ninth year of his age, he began his ſtudies, under the direction of Hadrian Junius and James Coccius. Antonides took great pleaſure in reading the Latin poets, and carefully compared them with Grotius, Heinſius, &c. By this means he acquired a taſte for poetry, and enriched his mind with noble ideas. He firſt attempted to tranſlate ſome pieces of Ovid, Horace, and other ancients; and, having formed his taſte on theſe excellent models, he at length undertook one of the moſt difficult taſks in poetry, to write a tragedy: This was entitled *Traxil*, or, *The invaſion of China*. Antonides, however, was ſo modeſt, as not to permit it to be publiſhed. Vondel, who was then engaged in a dramatic piece, which was taken alſo from ſome event that happened in China, read Antonides's tragedy; and was ſo well pleaſed with it, that he declared, if the author would not print it, he would take ſome paſſages out of it, and make uſe of them in his own tragedy. He accordingly did ſo; and it was reckoned much to the honour of Antonides, to have written what might be adopted by ſo great a poet as Vondel was acknowledged to be by all good judges. Upon the concluſion of the peace between Great Britain and Holland, in the year 1674, Antonides wrote a piece, entitled *Bellona aan band*, i. e. "Bellona chained;" a very elegant poem, conſiſting of ſeveral hundred verſes. He next wrote an ingenious heroic poem, which he entitled *The River Y* (the river on which Amſterdam is built).

Antonides's parents had bred him up an apothecary; but his remarkable genius for poetry ſoon gained him the eſteem and friendſhip of ſeveral perſons of diſtinction; and particularly of Mr Buiſero, one of the lords of the admiralty at Amſterdam, and a great lover of poetry, who ſent him at his expence to purſue his ſtudies at Leyden, where he remained till he took his degree of doctor of phyſic, and then his patron gave him a place in the admiralty. In 1678, Antonides married Suſanna Bermans, a miniſter's daughter, who had alſo a talent for poetry. His marriage was celebrated by ſeveral eminent poets, particularly by the famous Peter Francius, profeſſor of eloquence, who compoſed ſome Latin verſes on the occaſion. After marriage, he did not much indulge his poetic genius; and within a few years he fell into a conſumption, of which he died on the 18th September 1684, being then but thirty-ſeven years and a few months old. He is eſteemed the moſt eminent Dutch poet after Vondel. His works have been printed ſeveral times, having been collected by Father Anthony Tauſz. The laſt edition was printed by Nicholas Ten Hoom, at Amſterdam, in the year 1714, in 4to, under the direction of David Van Hoogſtraaten, one of the maſters of the Latin ſchool of that city, who added to it alſo the life of the poet.

ANTONINUS, Pius, a celebrated Roman emperor, was born A. D. 86, at Lanuvium in Italy. Diſtinguiſhed for eminence of character, his family had long maintained the honour of the houſe of Niſmes in Gaul, from whence they had deſcended. Both his father and grandfather had held the office of conſul. Arius Antoninus his maternal grandfather, by his amiable diſpoſition and love of literature, had acquired an eminent character, and was very intimate with Pliny the younger. Under him the young Titus after his father's death completed his education. His character on arriving at the age of maturity, manifeſted itſelf in the moſt promiſing manner. To an improved underſtanding, a virtuous heart, a mild and dignified character, and a noble eloquence, he joined a happy phyſiognomy. Simple in his taſte, and guided by temperance in all his actions and ſentiments, he was entirely free from all affectation and pompoſity. Antoninus.

In the year 120, among the many public honours which his birth and connexions gave him a claim to, he was elevated to the high poſt of conſul, and was afterwards appointed by Adrian to be one of the four conſulars, betwixt whom the ſupreme power of Italy was divided. Becoming in his turn proconſul of Aſia, he acquitted himſelf with ſuch reputation, that he even excelled his grandfather Arius who had formerly enjoyed that high truſt. Returning from Aſia he was not only received into the favour, but likewiſe the confidence and council of Adrian, and was always diſpoſed to act with lenity. He married Annia Fauſtina, the daughter of Annius Verus, whoſe character was far from being untaxed with reproach, but his lenient diſpoſition induced him to avoid public ſcandal, and he behaved towards his aged father-in-law with the moſt becoming reſpect. Two ſons and two daughters were the fruits of this marriage. The ſons died when they were young, and the eldeſt daughter, who was married to Lamia Sylvanus, died when Titus proceeded towards his Aſiatic government. Fauſtina the youngeſt married Marcus Aurelius, who was afterwards emperor.

After the death of Verus, Adrian reſolving to adopt Antoninus, he was induced to accept of the ſucceſſion to ſo important a charge as the Roman empire, although with a conſiderable degree of reluctance, and was accordingly nominated by Adrian in February 25. A. D. 138, in the preſence of the council of the chief ſenators, and at the ſame time created him his colleague in performing the proconſular and tribunitial duties. Extending his plans of adoption ſtill farther, Adrian cauſed Antoninus adopt the ſon of Verus, then ſeven years of age, and Marcus Annius, afterwards named Aurelius, then ſeventeen years of age, a relation of Adrian's, and nephew to his own wife. The dutiful and merited attention which Antoninus beſtowed on Adrian during the laſt months of his illneſs, gives a very high idea of his character. On July 10. A. D. 138, he ſucceeded to the empire amidſt the univerſal acclamations of the ſenate and people, who anticipated in his well tried virtues that happineſs which a good and wiſe ſovereign is able to beſtow upon his ſubjects.

The Roman world enjoyed ſuch tranquillity under his reign that it affords few materials for hiſtory; yet it is to be regretted that Capitolinus is the only hiſtorian from whom any direct information can be received concerning this peaceful period, and he is none of the moſt perſpicuous. It however appears that the uſual honours and titles, together with the addition of the ſurname of Pius, which both his conduct and zeal in defending and honouring the memory of his predeceſſor united to ſuggeſt, were willingly conferred upon him by the ſenate. In the beginning of his reign there were ſeveral conſpiracies formed again him, but this only afforded him an inſtance of ſignalizing his clemency, which he did in the moſt ſtriking manner. Although he was unable to prevent juſtice from taking its due

courſe

Antoninus. course againſt the ringleaders, he prohibited all inveſtigation after their accomplices, and took the ſon of Attilius, one of the principal conſpirators, under his protection. Various commotions were raiſed in ſeveral parts of the empire; but by the vigilance of his lieutenants, theſe were eaſily quelled. The incurſions of the Brigantes in Britain were reſtrained, and a new wall which was built to the north of that of Adrian, from the mouth of the Eſk to that of Tweed, and which was called the *Wall of Antoninus*, was fixed as the boundary of the Roman province in Britain. The reign of Antoninus upon the whole was ſingularly peaceful, and realized a ſaying of Scipio, "That he preferred ſaving the life of one citizen, to deſtroying a thouſand enemies."

A deſire of promoting the intereſt of his people, of protecting them from oppreſſion, of adminiſtering juſtice through every corner of the realm, and of being inſtrumental to the happineſs and peace of his government, influenced all his proceedings. He delighted greatly in laying before the ſenate the motives of all his actions, and in his manner of living and converſing he employed the ſame prudential œconomy and air of equality, which had ſo diſtinguiſhed his predeceſſors Trajan and Adrian. On account of the ſweetneſs of his temper he bore with firmneſs many indignities offered him; and under his reign the race of informers were entirely extinguiſhed, and condemnations and confiſcations were very rare. The various public calamities which occurred in his time were all relieved by him with the greateſt benevolence. He avoided as much as poſſible laying any burthens upon his people, and on this account made few journeys through his dominions. He was frugal in the uſe of the public revenues, but profuſe in his own patrimony, a great economiſt, devoid of avarice, and very liberal towards works of ornament and utility, and even towards gratifying the pleaſure of his people. A temple in honour of Adrian in Rome, and perhaps the amphitheatre and aqueduct at Niſmes, were his chief buildings.

Juriſprudence was to this emperor, like that of his predeceſſor, an intereſting ſubject for improvement; and ſeveral decrees which he iſſued, diſplay his commendable ſpirit of equity. The natural conſequence of this equity was, that Antoninus acquired a reputation and fame which no military achievments could have conferred; and his friendſhip was courted by the neighbouring princes.

There is ſcarcely a blot to be found to tarniſh his character; and frugality, modeſty, and harmleſs amuſement continued to employ his private hours. It may perhaps be admitted that he was too indulgent towards an unworthy wife, and that the divine honours he beſtowed on her memory were not merited by her conduct. In the management of his complicated buſineſs, he was exact to ſuch a degree that it was even ridiculed by ſome; but he found the daily advantage of this accuracy. The growing virtue of Marcus Aurelius ſoon drew his attention after he aſcended the throne, and having given him his daughter in marriage, he declared him Cæſar. Nor was he miſtaken in his choice; for Aurelius acted with the utmoſt fidelity and affection amid all the honours that Antoninus. he continued to confer upon him. Enjoying this large ſhare of domeſtic bliſs, in the 74th year of his age he was ſeized with a fever at his favourite country ſeat of Lori. Convinced of his approaching fate, he convened the principal officers of the ſtate, and confirmed his election of Aurelius, and gave him the imperial enſigns. A delirium enſued, in an interval of which he gave the watch word *Æquanimitas*, and calmly reſigned his breath in the 23d year of his reign. His aſhes were conſigned to the tomb of Adrian, and divine honours paid to his memory. He was univerſally regretted, and ſucceeding emperors bore his name as a badge of honour. The ſenate and his ſucceſſor erected a ſculptured pillar to his memory, which is ſtill ſhown to ſtrangers as one of the chief ornaments of Rome. (*Gen. Biog.*)

Antoninus Philosophus, *Marcus Aurelius*, the Roman emperor, born at Rome, the 26th of April, in the 121ſt year of the Chriſtian era. He was called by ſeveral names till he was admitted to the Aurelian family, when he took that of Marcus Aurelius Antoninus. Hadrian, upon the death of Cejonius Commodus, turned his eyes upon Marcus Aurelius; but, as he was not then 18 years of age, and conſequently too young for ſo important a ſtation, he fixed upon Antoninus Pius, whom he adopted, upon condition that he ſhould likewiſe adopt Marcus Aurelius. The year after this adoption, Hadrian appointed him queſtor, though he had not yet attained the age preſcribed by the law. After the death of Hadrian, Aurelius married Fauſtina, the daughter of Antoninus Pius, by whom he had ſeveral children. In the year 139, he was inveſted with new honours by the emperor Pius, in which he behaved in ſuch a manner as endeared him to that prince and the whole people.

Upon the death of Pius, which happened in the year 161, he was obliged by the ſenate to take upon him the government; in the management of which he took Lucius Verus as his colleague. Dion Caſſius ſays, that the reaſon of doing this was, that he might have leiſure to purſue his ſtudies, and on account of his ill ſtate of health; Lucius being of a ſtrong vigorous conſtitution, and conſequently more fit for the fatigues of war. The ſame day he took upon him the name of Antoninus, which he gave likewiſe to Verus his colleague, and betrothed his daughter Lucilla to him. The two emperors went afterwards to the camp; where, after having performed the funeral rites of Pius, they pronounced each of them a panegyric to his memory. They diſcharged the government in a very amicable manner. It is ſaid that, ſoon after Antoninus had performed the apotheoſis of Pius, petitions were preſented to him by the Pagan prieſts, philoſophers, and governors of provinces, in order to excite him to perſecute the Chriſtians; which he rejected with indignation, and interpoſed his authority for their protection, by writing a letter to the common aſſembly of Aſia, then held at Epheſus (A). The happineſs which the empire began to enjoy under theſe two emperors was interrupted, in the year 162, by a dreadful inundation of the Tiber, which

(A) Euſebius has preſerved this letter, Hiſt. Eccleſ. lib. iv. cap. 13. but he falſely aſcribes it to Antoninus Pius, whereas it was wrote by Marcus Antoninus, as Valerius makes it appear in his annotations on Euſebius.

Antoninus. which deſtroyed a vaſt number of cattle, and occaſioned a famine at Rome. This calamity was followed by the Parthian war; and at the ſame time the Catti ravaged Germany and Rhætia. Lucius Verus went in perſon to oppoſe the Parthians; and Antoninus continued at Rome, where his preſence was neceſſary.

During this war with the Parthians, about the year 163 or 164, Antoninus ſent his daughter Lucilla to Verus, ſhe having been betrothed to him in marriage, and attended her as far as Brunduſium: he intended to have conducted her to Syria; but it having been inſinuated by ſome perſons, that his deſign of going into the eaſt was to claim the honour of having finiſhed the Parthian war, he returned to Rome. The Romans having gained a victory over the Parthians, who were obliged to abandon Meſopotamia, the two emperors triumphed over them at Rome in the year 166; and were honoured with the title of *Fathers of their country*. This year was fatal, on account of a terrible peſtilence which ſpread itſelf over the whole world, and a famine under which Rome laboured: it was likewiſe in this year that the Marcomanni, and many other people of Germany, took up arms againſt the Romans; but the two emperors having marched in perſon againſt them, obliged the Germans to ſue for peace. The war, however, was renewed the year following, and the two emperors marched again in perſon; but Lucius Verus was ſeized with an apoplectic fit, and died at Altinum. The Romans were now defeated with great ſlaughter; and the emperor, not chooſing to burden his ſubjects with new taxes, expoſed to public ſale the furniture of the palace, the gold and ſilver plate belonging to the crown, and his wife's rich garments embroidered with gold, and a curious collection of pearls, which Adrian had purchaſed during his long progreſs through the provinces of the empire, and was called *Adrian's cabinet*.

In the year 170, Antoninus made vaſt preparations againſt the Germans, and carried on the war with great vigour. During this war, in 174, a very extraordinary event is ſaid to have happened, which, according to Dion Caſſius, was as follows: Antoninus's army being blocked up by the Quadi, in a very diſadvantageous place, where there was no poſſibility of procuring water; in this ſituation, being worn out with fatigue and wounds, oppreſſed with heat and thirſt, and incapable of retiring or engaging the enemy, in an inſtant the ſky was covered with clouds, and there fell a vaſt quantity of rain: the Roman army were about to quench their thirſt, when the enemy came upon them with ſuch fury, that they muſt certainly have been defeated, had it not been for a ſhower of hail, accompanied with a ſtorm of thunder and lightning, which fell upon the enemy, without the leaſt annoyance to the Romans, who by this means gained the victory (B). Antoninus. In 175, Antoninus made a treaty with ſeveral nations of Germany. Soon after, Avidius Caſſius, governor of Syria, revolted from the emperor: this inſurrection, however, was put an end to by the death of Caſſius, who was killed by a centurion named *Anthony*. Antoninus behaved with great lenity towards thoſe who had been engaged in Caſſius's party; he would not put to death, nor impriſon, nor even ſit in judgment himſelf upon any of the ſenators engaged in this revolt; but he referred them to the ſenate, fixing a day for their appearance, as if it had been only a civil affair. He wrote alſo to the ſenate, deſiring them to act with indulgence rather than ſeverity; nor to ſhed the blood of any ſenator or perſon of quality, or of any other perſon whatſoever; but to allow this honour to his reign, that, even under the misfortune of a rebellion, none had loſt their lives, except in the firſt heat of the tumult. In 176, Antoninus viſited Syria and Egypt: the kings of thoſe countries, and ambaſſadors alſo from Parthia, came to viſit him. He ſtaid ſeveral days at Smyrna; and, after he had ſettled the affairs of the eaſt, went to Athens, on which city he conferred ſeveral honours, and appointed public profeſſors there. From thence he returned to Rome with his ſon Commodus, whom he choſe conſul for the year following, though he was then but 16 years of age, having obtained a diſpenſation for that purpoſe. On the 27th of September, the ſame year, he gave him the title of *Imperator*; and on the 23d of December, he entered Rome in triumph, with Commodus, on account of the victories gained over the Germans. Dion Caſſius tells us, that he remitted all the debts which were due to himſelf and the public treaſury during 46 years, from the time that Hadrian had granted the ſame favour, and burnt all the writings relating to thoſe debts. He applied himſelf likewiſe to correct many enormities, and introduced ſeveral excellent regulations. In the year 179, he left Rome with his ſon Commodus, in order to go againſt the Marcomanni, and other barbarous nations; and the year following gained a conſiderable victory over them, and would, in all probability, have entirely ſubdued them in a very ſhort time, had he not been taken with an illneſs, which carried him off on the 17th of March 180, in the 59th year of his age, and 19th of his reign. The whole empire regretted the loſs of ſo valuable a prince, and paid the greateſt regard to his memory: he was ranked amongſt the gods, and almoſt every perſon had a ſtatue of him in their houſes. His book of meditations has been much admired by the beſt judges.

ANTONINE'S

(B) The Pagans, as well as Chriſtians, according to Mr Tillemont (p. 621. art. xvi.), have acknowledged the truth of this prodigy, but have greatly differed as to the cauſe of ſuch a miraculous event; the former aſcribing it, ſome to one magician and ſome to another: In Antoninus's pillar, the glory is aſcribed to Jupiter, the god of rain and thunder. But the Chriſtians affirmed, that God granted this favour at the prayer of the Chriſtian ſoldiers in the Roman army, who are ſaid to have compoſed the twelfth or Melitene legion; and, as a mark of diſtinction, we are told that they received the title of the *Thundering Legion*, from Antoninus (Euſeb. Eccl. Hiſt. lib. v. cap. 5.) Mr Moyle, in the letters printed in the ſecond volume of his works, has endeavoured to explode the hiſtory of the Thundering Legion; which occaſioned Mr Whiſton to publiſh an anſwer, in 1716, entitled, *Of the Thundering Legion; or, Of the miraculous deliverance of Marcus Antoninus and his army, by the prayers of the Chriſtians.*

Antoninus.

Antonine's Column. See Column.

Antoninus's Wall, the name of the third rampart or defence that had been built or repaired by the Romans againſt the incurſions of the North Britons. It is called by the people in the neighbourhood, *Graham's Dyke;* from the notion that one Graham, or Grimus, firſt made a breach in it after the retreat of the Romans out of Britain. The firſt barrier erected by the Romans was the chain of forts made by Agricola * from the frith of Forth to that of Clyde, in the year 81, to protect his conqueſts from the inroads of the Caledonians. The ſecond was the vallum, or dyke, flung up by Adrian † in the year 121. It terminated on the weſtern ſide of the kingdom at *Axelodunum*, or *Brugh*, on the Solway ſands, and was ſuppoſed to have reached no further than *Pons Ælii*, or *Newcaſtle*, on the eaſtern. But from an inſcription lately diſcovered, it appears to have extended as far as the wall of Severus ‡. This rampart of Adrian's was ſituated much farther ſouth than Agricola's chain; the country to the north having been either, according to ſome authors, recovered by the native Britons after the departure of Agricola; or, according to others, voluntarily ſlighted by Adrian. However, this work of Adrian's did not long continue to be the extreme boundary of the Roman territories to the north in Britain. For Antoninus Pius, the adopted ſon and immediate ſucceſſor of Adrian, having, by his lieutenant Lollius Urbicus, recovered the country once conquered by Agricola, commanded another rampart to be erected between the friths of Forth and Clyde, in the track where Agricola had formerly built his chain of forts. The great number of inſcriptions which have been found in or near the ruins of this wall, or rampart, to the honour of Antoninus Pius, leave us no room to doubt its having been built by his direction and command. If the fragment of a Roman pillar with an inſcription, now in the college library of Edinburgh, belonged to this work, as it is generally ſuppoſed to have done, it fixes the date of its execution to the third conſulſhip of Antoninus, which was A. D. 140, only 20 years after that of Adrian, of which this ſeems to have been an imitation. This wall or rampart, as ſome imagine, reached from Caer-ridden on the frith of Forth to Old Kirkpatrick on the Clyde; or, as others think, from Kinniel on the eaſt to Dunglaſs on the weſt. Theſe different ſuppoſitions hardly make a mile of difference in the length of this work, which, from ſeveral actual menſurations, appears to have been 37 Engliſh or 40 Roman miles. Capitolinus, in his life of Antoninus Pius, directly affirms, that the wall which that emperor built in Britain was of turf. This in the main is unqueſtionably true; though it is evident (from the veſtiges of it ſtill remaining, which not very many years ago were dug up and examined for near a mile together) that the foundation was of ſtone. Mr Camden alſo tells us, from the papers of one Mr Anthony Pont, that the principal rampart was faced with ſquare ſtone, to prevent the earth from falling into the ditch. The chief parts of this work were as follows: 1. A broad and deep ditch, whoſe dimenſions cannot now be diſcovered with certainty and exactneſs, though Mr Pont ſays, it was 12 feet wide. 2. The principal wall or rampart was about 12 feet thick at the foundation, but its original height cannot now be determined. This wall was ſituated on the ſouth brink of the ditch. 3. A military way on the ſouth ſide of the principal wall, well paved, and raiſed a little above the level of the ground. This work, as well as that of Adrian, was defended by garriſons placed in forts and ſtations along the line of it. The number of theſe forts or ſtations, whoſe veſtiges were viſible in Mr Pont's time, was 18, ſituated at about the diſtance of two miles from each other. In the intervals between the forts, there were turrets or watch towers. But the number of theſe, and their diſtance from each other, cannot now be diſcovered. Antoninus.

It is not a little ſurpriſing, that though it is now more than 1600 years ſince this work was finiſhed, and more than 1300 ſince it was ſlighted, we can yet diſcover, from authentic monuments, which are ſtill remaining, by what particular bodies of Roman troops almoſt every part of it was executed. This diſcovery is made from inſcriptions upon ſtones, which were originally built into the face of the wall, and have been found in or near its ruins, and are carefully preſerved. The number of ſtones with inſcriptions of this kind now extant, is 11: of which ſix may be ſeen at one view in the college of Glaſgow, one in the college of Aberdeen, one in the college of Edinburgh, one in the collection of Baron Clerk, one at Cochnoch houſe, and one at Calder houſe. From theſe inſcriptions it appears in general, that this great work was executed by the ſecond legion, the vexillations of the ſixth legion and of the twentieth legion, and one cohort of auxiliaries. If theſe corps were all complete, they would make in all a body of 7800 men. Some of theſe inſcriptions have ſuffered greatly by the injuries of time and other accidents; ſo that we cannot diſcover from them, with abſolute certainty, how many paces of this work were executed by each of theſe bodies of troops. The ſum of the certain and probable information contained in theſe inſcriptions, as it is collected by the learned and illuſtrious Mr Horſley, ſtands thus:

	Paces.
The ſecond legion built - -	11,603
The vexillation of the ſixth legion -	7411
The vexillation of the twentieth legion -	7 [illegible]02
All certain - -	26,515
The vexillation of the twentieth legion, the monument certain, and the number probable	3411
The ſame vexillation, on a plain monument, no number viſible, ſuppoſed -	3500
The ſixth legion, a monument, but no number, ſuppoſed - -	3000
Cohors prima Cugernorum - -	3000
Total	39,726

or 39 miles 726 paces, nearly the whole length of the wall. It would have been both uſeful and agreeable to have known how long time theſe troops were employed in the execution of this great work. But of this we have no information. Neither do we know what particular bodies of troops were in garriſon in the ſeveral forts and ſtations along the line of this wall, becauſe theſe garriſons were withdrawn before the *Notitia Imperii* was written.

Though we cannot diſcover exactly how many years this

* See *Agricola.*

† See *Adrian.*

‡ See *Severus.*

Antonio. this wall of the emperor Antoninus continued to be the boundary of the Roman territories in Britain, yet we know with certainty that it was not very long. For we are told by an author of undoubted credit, that, in the reign of Commodus, A. D. 180, "he had wars with ſeveral foreign nations, but none ſo dangerous as that of Britain. For the people of the iſland, having paſſed the wall which divided them from the Romans, attacked them, and cut them to pieces."

Dio, l. 72. p. 892.

ANTONIO, Nicholas, knight of the order of St James and canon of Seville, did great honour to the Spaniſh nation by his Bibliotheque of their writers. He was born at Seville in 1617, being the ſon of a gentleman whom King Philip IV. made preſident of the admiralty eſtabliſhed in that city in 1626. After having gone through a courſe of philoſophy and divinity in his own country, he went to ſtudy law at Salamanca; where he cloſely attended the lectures of Franciſco Ramos del Manzano, afterwards counſellor to the king and preceptor to Charles II. Upon his return to Seville, after he had finiſhed his law ſtudies at Salamanca, he ſhut himſelf up in the royal monaſtery of Benedictines, where he employed himſelf ſeveral years in writing his *Bibliotheca Hiſpanica*, having the uſe of the books of Bennet de la Sana, abbot of that monaſtery and dean of the faculty of divinity at Salamanca. In the year 1659, he was ſent to Rome by King Philip IV. in the character of agent general from the prince: he had alſo particular commiſſions from the inquiſition of Spain, the viceroys of Naples and Sicily, and the governor of Milan, to negotiate their affairs at Rome. The cardinal of Arragon procured him, from Pope Alexander VII. a canonry in the church of Seville, the income whereof he employed in charity and purchaſing of books; he had above 30,000 volumes in his library. By this help, joined to continual labour, and indefatigable application, he was at laſt enabled to finiſh his Bibliotheca Hiſpanica, in four volumes in folio, two of which he publiſhed at Rome in the year 1672. The work conſiſts of two parts; the one containing the Spaniſh writers who flouriſhed before the 15th century, and the other thoſe ſince the end of that century. After the publication of theſe two volumes, he was recalled to Madrid by King Charles II. to take upon him the office of counſellor to the cruſade; which he diſcharged with great integrity till his death, which happened in 1684. He left nothing at his death but his vaſt library, which he had brought from Rome to Madrid; and his two brothers and nephews being unable to publiſh the remaining volumes of his Bibliotheca, ſent them to Cardinal d'Aguiſne, who paid the charge of the impreſſion, and committed the care thereof to Monſieur Marti, his librarian, who added notes to them in the name of the cardinal.

Antonio, St, one of the Cape de Verd iſlands, lying in E. Long. 0. 26. N. Lat. 18. 10. It is ſeparated from St Vincent's by a clear navigable channel two leagues in breadth. On the north ſide it has a good road for ſhipping, with a collection of freſh water riſing from ſprings, which, however, ſcarcely merits the name of a pond. The iſland ſtretches from north-eaſt to ſouth-weſt, and is filled with mountains; one of which is of ſo extraordinary a height, as to be compared with the Peak of Teneriffe: Its top is conſtantly covered with ſnow, and, notwithſtanding the clearneſs of the ſky, is generally hid in clouds. Here are produced a variety of fruits; oranges, lemons, palms, melons, &c. and ſome ſugar canes. The potatoes and melons are particularly excellent, and are much ſought after by mariners. But notwithſtanding all this plenty, the inhabitants live in the moſt wretched poverty. They are in number about 500, chiefly negroes, under the protection of the Portugueſe, whoſe language they ſpeak, and imitate their manners. To the north-weſt ſtands a village, containing about twenty huts; and at leaſt 50 families, under the direction of a governor, or, as they call him, a *captain*, a prieſt, and a ſchoolmaſter.

Antonio, Antonius.

Antonio, St, a Dutch fort in Axim, on the Gold coaſt of Africa. It ſtands on a high rock, which projects into the ſea in form of a peninſula; and is ſo environed by rocks and dangerous ſhoals, as to be inacceſſible to an enemy but by land, where it is fortified by a parapet, drawbridge, and two batteries of heavy cannon. Beſides this it has a battery towards the ſea. The three batteries conſiſt of 24 cannon. Its form is triangular; the building is neat, ſtrong, and commodious for the extent, that being but ſmall, on account of the narrowneſs of the rock on which it is built. The garriſon is uſually compoſed of 25 white men, and an equal number of negroes, under the command of a ſerjeant. It is maintained at the expence of the Weſt India Company; and when well ſtored with proviſions, is capable of making a long defence againſt any number of negroes. It is, however, as well as all other forts on this coaſt, liable to inconveniences from the heavy and continual rains, which damage the walls, and render frequent reparations neceſſary. This obliges the Dutch always to keep ready a quantity of lime or cement made of calcined oyſter ſhells, of which the coaſt produces great numbers. This ſettlement was firſt founded by the Portugueſe during the reign of Emanuel. They fixed it firſt upon a ſmall point; where, finding themſelves inſecure, they built the fort where it now ſtands. They were driven out by the Dutch in 1641; and, upon the concluſion of a peace with the States General, the fort remained by treaty in the hands of the Dutch Weſt India Company, who have kept poſſeſſion of it ever ſince.

ANTONIUS, Marcus, a famous Roman orator. While he filled the office of prætor, Sicily fell to his lot, and he cleared the ſeas of the pirates which infeſted that coaſt. He was made conſul with A. Poſthumius Albinus, in the year of Rome 653; when he oppoſed the turbulent deſigns of Sextus Titus, tribune of the people, with great reſolution and ſucceſs. Some time after, he was made governor of Cilicia, in quality of proconſul; where he performed ſo many great exploits, that he obtained the honour of a triumph. We cannot omit obſerving, that, in order to improve his great talent for eloquence, he became a ſcholar to the greateſt men at Rhodes and Athens, in his way to Cilicia, and when on his return to Rome. Soon after, he was appointed cenſor; which office he diſcharged with great reputation, having carried his cauſe before the people, againſt Marcus Duronius, who had preferred an accuſation of bribery againſt him, in revenge for Antonius's having eraſed his name out of the liſt of ſenators, which this wiſe cenſor had done, becauſe Duronius, when tribune of the people, had abrogated a law

Antonius. law which reſtrained immoderate expence in feaſts. He was one of the greateſt orators ever known at Rome; and it was owing to him, according to the teſtimony of Cicero, that Rome might boaſt herſelf a rival even to Greece itſelf in the art of eloquence. He defended, amongſt many others, Marcus Aquilius; and moved the judges in ſo ſenſible a manner, by the tears he ſhed, and the fears he ſhowed upon the breaſt of his client, that he carried his cauſe. He never would publiſh any of his pleadings, that he might not, as he ſaid, be proved to ſay in one cauſe, what might be contrary to what he ſhould advance in another. He affected to be a man of no learning. His modeſty, and many other qualifications, rendered him no leſs dear to many perſons of diſtinction, than his eloquence made him univerſally admired. He was unfortunately killed during thoſe bloody conſuſions raiſed at Rome by Marius and Cinna. He was diſcovered in the place where he had hid himſelf, and ſoldiers were ſent to deſpatch him: but his manner of addreſſing them had ſuch an effect, that none but he who commanded them, and had not heard his diſcourſe, had the cruelty to kill him. His head was expoſed before the roſtra, a place which he had adorned with his triumphal ſpoils. This happened 90 years before the Chriſtian era.

ANTONIUS, *Marcus*, the triumvir, grandſon to the former, was very handſome in his youth; for which reaſon he was greatly beloved by Curio, a ſenator, who by carrying him about in all his debaucheries, made him contract ſuch heavy debts, that his own father forbade him his houſe. Curio, however, was ſo generous as to bail him for 250 talents. When the civil war broke out, Curio took Cæſar's party, and prevailed with Antonius to do the ſame; for which he was made a tribune of the people, and in that office did Cæſar great ſervice. Cæſar having made himſelf maſter of Rome, gave Antonius the government of Italy: At the battle of Pharſalia, Cæſar confided ſo much in him, that he gave him the command of the left wing of his army, whilſt he himſelf led the right. After Cæſar was made dictator he made Antonius general of the horſe, though he had never been prætor; in which command he exerted his power with the utmoſt violence. He was made conſul, when Cæſar enjoyed that honour for the fifth time, the laſt year of that uſurper's life. On Cæſar's death, he harangued the populace with great art, and raiſed their fury againſt his murderers; flattering himſelf that he ſhould eaſily get into the place which Cæſar had filled; but his haughty behaviour made him loſe all the advantages his affected concern for Cæſar had gained him. His ill treatment of Octavius, and quarrel with him, produced another civil war; which ended in an accommodation between him, Octavius, and Lepidus, fatal to the peace of Rome. They agreed to ſhare the ſupreme power among them; and many of the moſt illuſtrious Romans were ſacrificed by proſcription to cement this bloody league, which is known by the name of the *Second Triumvirate*. But the triumvirs were too ambitious, and hated one another too much, to be long united. Antonius went into Aſia to raiſe money for his ſoldiers; during his abſence, Fulvia his wife quarrelled with Octavius. When Antonius was in Aſia, indulging himſelf in all manner of luxury, the famous Cleopatra inſpired him with the moſt violent paſſion. Hearing of the quarrel between Fulvia and Octavius, and finding Octavius was become powerful, Antonius entered into a confederacy with Sextus Pompeius, who was maſter of Sicily. He then went into Italy, in order to fight Octavius; but Fulvia, who had been the author and promoter of the war, dying, Octavius and Antonius came to an agreement. One of the conditions of this new peace was, that they ſhould together attack Pompey, though the former had lately made an alliance with him. Antonius then married Octavia, ſiſter to Octavius, as a pledge of their renewed friendſhip: but returned ſoon after to his beloved Cleopatra, and again lived with her in Alexandria. Octavius took hold of this pretence to inveigh againſt him, and begin the war again. At laſt they engaged in a ſea fight at Actium, in which Octavius gained a complete victory; which was followed by the deaths both of Antonius and Cleopatra. The infatuated Antonius fell upon his own ſword; and Cleopatra ſtung herſelf to death with an aſp, as was ſuppoſed, to avoid gracing the victor's triumph at Rome.

ANTONOMASIA, a form of ſpeech, in which, for a proper name, is put the name of ſome dignity, office, profeſſion, ſcience or trade; or when a proper name is put in the room of an appellative. Thus a king is called his *majeſty*; a nobleman, his *lordſhip*. We ſay the *philoſopher* inſtead of Ariſtotle, and the *orator* for Cicero: Thus a man is called by the name of his country, a *German*, an *Italian*; and a grave man is called a *Cato*, and a wiſe man a *Solomon*.

ANTOSIANDRIANS, a ſect of rigid Lutherans, who oppoſe the doctrine of Oſiander relating to juſtification. Theſe are otherwiſe denominated *Oſiandromaſtiges*.—The Antoſiandrians deny that man is made juſt, with that juſtice wherewith God himſelf is juſt; that is, they aſſert, that he is not made eſſentially, but only imputatively, juſt; or, that he is not really made juſt, but only pronounced ſo.

ANTRIM, the moſt northerly county of Ireland. It is bounded by that of Down on the ſouth-eaſt, that of Londonderry on the weſt, from which it is ſeparated by the river Bann, part of Armagh on the ſouth, St George's channel on the eaſt, and the Deu-Caledonian ocean on the north. Its greateſt length is about 46 miles, its greateſt breadth about 27; and the number of acres it contains, plantation meaſure, is computed at 383,000. Though the country is much encumbered with bogs and marſhes, yet it enjoys a pretty good air, and is well peopled, chiefly with Proteſtants. Where it is free from bogs the ſoil is fruitful. It ſends two members for the ſhire, and two for each of the following towns, viz. Liſburn, Belfaſt, Antrim and Randalſtown.

Certain narrow valleys, called *glyns*, beginning here, and running a great way along the coaſt, belonged formerly to the Biſſets, noblemen of Scotland, who, having been obliged to quit that country for having aſſaſſinated Patrick earl of Athole upon a private quarrel, came hither, and had a great eſtate beſtowed upon them by Henry III. of England; of which, in the reign of Edward II. a part was forfeited by the rebellion of Hugh, then chief of the family. Another tract near this, called the *Rowte*, belonged anciently to the Macguillers, but now to the M'Donnels earls of Antrim.

Upon the coaſt of this county are the promontories

Antrim || Antwerp.

called by Ptolemy, *Rhobogdium*, *Vennicinium*, and *Boræum*, now *Fair Foreland*, *Ramſhead*, and *St Helen's head*. The river alſo, ſtyled by the ſame author *Vidua*, and now *Crodach*, runs through this county.—Here alſo is the remarkable natural curioſity called the *Giant's Cauſeway*, for a particular deſcription of which ſee that article.

Antrim, the capital town of the county of Antrim, in Ireland, ſeated at the north end of the lake Lough Neagh, about ſix miles from the mouth of the bay, having a good road before it, with a pier near the place, within which veſſels lie dry at low water. It was anciently a borough of great conſequence, as appears from the mayor's being admiral of a conſiderable extent of coaſt, as well in Down as in this county; the corporation enjoying the cuſtoms paid by all veſſels within theſe bounds, the creeks of Bangor and Belfaſt only excepted. This grant, however, the crown repurchaſed, and thereupon transferred the cuſtom-houſe to Belfaſt, to which town it is now much inferior as well in ſize as in trade. It is, however, ſtill a place of note, and ſends two members to the houſe of commons. It gives the title of *earl* to the noble family of M'Donnel.—At Antrim is a ſeat, with noble demeſnes, and beautiful and highly cultivated lands, of the earl of Maſſareene. W. Long. 6. 26. N. Lat. 54. 45.

ANTRUM, among *Anatomiſts*, a term uſed to denote ſeveral cavities of the body: as the *antrum highmorianum*, or that in the maxillary or jaw bone; *antrum pylori*, or that at the bottom of the pylorus, &c.

ANTWERP, a city of the duchy of Brabant, in the Auſtrian Netherlands, capital of the marquiſate of Antwerp, otherwiſe called the *marquiſate of the holy Roman empire*, ſituated in E. Long. 4. 15. N. Lat. 51. 12. It lies in a low marſhy ground on the Scheld, 24 miles from Bruſſels to the north. It is the third city in rank in Brabant, large and well built, containing 22 ſquares, and above 200 ſtreets, all ſtraight and broad, eſpecially that called the *Mere*, in which ſix coaches can go abreaſt. Moſt of the houſes are of freeſtone, and have an air of antiquity, being high, with courts before and gardens behind. At the head of the Mere is a crucifix of braſs thirty-three feet high. The cathedral dedicated to the Virgin Mary, the ſtadthouſe, and the exchange, are magnificent ſtructures: the latter is the firſt building of that kind in Europe, and on its model the exchanges of London and Amſterdam are built. Its pillars are all of blue marble, and carved, but all in a different manner. The exchange cost the city 300,000 crowns. Antwerp, towards the end of the fifteenth century, was one of the moſt celebrated towns that ever exiſted. The Scheld, on which it ſtands, being 20 feet deep at low water, and riſing 20 feet more at flood, ſhips of the greateſt burden came up to the quays, as in the river Thames at London; but when the United Provinces formed themſelves into a free ſtate, after having ſhaken off the yoke of Spain, they got the entire command of the navigation of the Scheld; which ruined the trade of Antwerp, and transferred it to Amſterdam. This made the inhabitants turn their heads to painting, jewelling, and banking, which they have continued to this day with great ſucceſs and reputation; for at Antwerp bills of exchange may be negotiated for any ſum to any part of Europe; and in the time of Queen Anne's wars, two brothers of the name of De Koning, paid the one the army of France, and the other that of the confederates. Beſides, here is a fine manufacture of tapeſtry and lace; and, for the promoting of trade, an inſurance company has been erected. This city is the ſee of a biſhop, who, as abbot of St Bernard, is the ſecond prelate in Brabant. The biſhopric is of great extent, and the cathedral a moſt noble pile, with one of the fineſt ſteeples in the world. The emperor Charles V. when he made his entry into Antwerp, ſaid it ought to be put in a caſe, and ſhowed only once a year for a rarity. The houſe of the hanſe towns, built when the city was in its flouriſhing condition, is a ſtately building, with magazines above for dry goods, and cellars below for wet, and in the middle ſtory were 300 lodging rooms for merchants; but now it is turned to a horſe barrack. There is a market here called the *Friday's market*, becauſe it is held every Friday, where all ſorts of houſehold goods, pictures, and jewels, are ſold by auction. No city in the Netherlands has ſo many and ſo fine churches as this. Many of them, particularly the cathedral and Jeſuits church, are adorned with paintings, by Sir Peter Paul Rubens, who was a native of this city; and by Quintin Maſſeys, who is ſaid to have been a blackſmith; but having fallen in love with a painter's daughter, and been told by her father, when he aſked her of him in marriage, that he would have none but a painter for his ſon-in-law, he went to Italy to ſtudy painting, and, in a few years, returned ſo eminent in his new profeſſion, that he found no difficulty in obtaining the father's conſent. He is interred at the entry of the cathedral, where his effigy is put up, with an inſcription, ſignifying, that conjugal love made an Apelles of a blackſmith. The above mentioned Jeſuits church is extremely magnificent, and the chapel of the Virgin, joining to it, ſtill more ſo. Among the cloiſters the moſt remarkable are, the noble and rich abbey of St Michael, on the banks of the Scheld, the apartments of which are truly royal, and in which all ſovereign princes that paſs this way actually lodge; and the Engliſh nunnery, of the order of St Tereſa, the nuns of which never wear linen, nor eat fleſh, and lie upon ſtraw: the grates of the convent are ſo diſmal, that it looks like a priſon. As to the fortifications of the city, it is environed with a fine wall, planted with rows of trees on each ſide, with walks between, broad enough for two coaches to go abreaſt, being alſo defended by a very ſtrong, large, regular citadel, in form of a pentagon, erected by the duke of Alva in 1568, which commands the town and the neighbouring country. The magiſtracy of this city is choſen only out of the ſeveral patrician families; and conſiſts of two burgomaſters and 18 echevins, beſides inferior magiſtrates. Among the privileges granted to it by its princes, there is one by which every perſon born in it is a citizen, though both his father and mother were foreigners.

Antwerp.

In 1585, Antwerp underwent a remarkable ſiege by the duke of Parma. It was then the moſt wealthy city in the Netherlands, and had long been the object of his deſigns; but the difficulties attending the enterpriſe obliged him to poſtpone it for a conſiderable time. In order to ſucceed, it was neceſſary to cut off the communication

Antwerp. communication of the city with Holland, Ghent, and all places above and below Antwerp on the Scheld. To effect this, he laid ſiege to Liltenhoulk and Tillo, places of the utmoſt conſequence to the ſecurity and commerce of the city: both were obſtinately defended; and the ſiege of the latter was raiſed, after it had been carried on for three months: however, the duke gained ſeveral other poſts on the river, where he built forts, and greatly annoyed the ſhipping and trade of the city. He next laid ſiege to Dendermonde, in order to cut off the communication with Ghent, in which he ſucceeded by the reduction of the town. His next attempt was on Vilvorde: this place he took by aſſault, and thereby cut off the communication with Bruſſels. Finding, however, this method of hemming in the city tedious, and ineffectual while an opening to the mouth of the river remained, he formed a deſign of building a bridge acroſs the Scheld, the extremities of which were to be defended by ſtrong forts and outworks. He began with collecting great quantities of wood at Callo and Fort St Philip, where he intended the bridge ſhould be built; but his project was for ſome time retarded by the Antwerpers, who broke down the dykes, overflowed the whole country, and carried off his magazines by the inundation. Not diſcouraged by this loſs, he applied himſelf diligently to repair it, and with incredible expedition cut a canal from Steken to Callo, by which he carried off the waters. He then ſet to work upon the bridge, and finiſhed it in ſeven months, without any interruption from the Zealanders. During the building of this bridge, Aldegonde, governor of Antwerp, propoſed to build a fort on Couvenſteyn dyke, in order to ſecure that important poſt, and then break down the dyke when the bridge was near finiſhed: but he was violently oppoſed by certain citizens, who apprehended that their lands and villas would be deſtroyed by the inundation. This unſeaſonable oppoſition, with the negligence of the magiſtrates, who, becauſe the markets were high, had not laid in a ſufficient ſtock of corn, occaſioned the loſs of the city. However, in deſpite of all the duke of Parma's precautions, the Zealanders found means to throw in a convoy of corn; but the citizens, knowing they would not run the riſk of carrying it back again, ſo cheapened the price, that theſe bold traders refuſed ever to bring their goods again to ſo bad a market. The Antwerpers, having thus through avarice brought on their ruin, began in a ſhort time to ſuffer by famine; they then preſſed the Zealanders to attempt ſomething for their relief, but it was now too late. While the magiſtrates were deliberating on ſome means for deſtroying the bridge, which they might have prevented from being ever completed, one Ginebelli, a Mantuan engineer, offered his ſervices, undertaking at a certain expence to blow it into the air. Even in this extremity the expence was grudged: but neceſſity at laſt overcame this obſtacle; Ginebelli was furniſhed with two large veſſels, a number of ſmall boats, and every thing neceſſary. He formed the two large veſſels into fire ſhips, which he ſet adrift with the ſtream, deceiving the enemy by means of falſe fires lighted up in the fleet of ſmall boats. The train of one of the fire ſhips was expended before the time expected, and ſhe blew up with a terrible explotion, but with little damage to the bridge. The other was more ſucceſsful, carrying off [illegible] outworks, ſetting fire to the whole bridge, and [illegible] ing above 5 [illegible] in the ruin it made. The [illegible], however, was ſoon extinguiſhed, and the bridge repaired by the duke of Parma, while the Antwerpers were prevented by avarice from repeating the [illegible] ment; ſo that they were ſoon reduced to the [illegible] ſtraits, and obliged to ſurrender. It is ſaid that the city of Amſterdam had obſtructed every [illegible] for the relief of Antwerp, hoping to profit by its deſtruction. It was not doubted but the Proteſtants would forſake it as ſoon as it fell into the hands of an arbitrary Catholic prince; and this conjecture was ſoon fulfilled by the removal of many families with their effects to Amſterdam.—After the battle of Ramillies, the city of Antwerp ſurrendered to the duke of Marlborough. It was taken by the French in 1746, but reſtored to the houſe of Auſtria at the treaty of Aix-la-Chapelle.

ANUBIS, a ſymbolical deity of the Egyptians, was regarded as the faithful companion of Oſiris and of Iſis. Temples and prieſts were conſecrated to him, and his image was borne in all religious ceremonies.

Cynopolis, the preſent Minieh, ſituated in the Lower Thebais, was built in honour of Anubis. The temple wherein he was worſhipped no longer ſubſiſts. The prieſts celebrated his feſtivals there with great pomp, and conſecrated the dog to him as his living repreſentation. "Anubis (ſays Strabo) is the city of dogs, the capital of the Cynopolitan prefecture. Theſe animals are fed there on ſacred aliments, and religion has decreed them a worſhip." An event, however, related by Plutarch, brought them into conſiderable diſcredit with the people. Cambyſes having ſlain the god Apis, and thrown his body into a field, all animals reſpected it except the dogs, which alone ate of his fleth. This impiety diminiſhed the popular veneration for them.

Cynopolis was not the only city which burned incenſe on the altars of Anubis. He had chapels in almoſt all the temples. On ſolemnities, his image always accompanied thoſe of Iſis and Oſiris. Rome having adopted the ceremonies of Egypt, the emperor Commodus, to celebrate the Iſiac feaſts, ſhaved his head, and himſelf carried the god Anubis. The ſtatue of this god was either of maſſive gold or gilt, as well as the attributes that accompanied him. Anubis ſignifies *gilded*. The denomination was myſterious; and the Egyptian prieſts, it would ſeem, had not given it without reaſon.

The ſignification of this emblematical deity is thus explained by Plutarch: "The circle which touches and ſeparates the two hemiſpheres, and which is the cauſe of this diviſion, receiving the name of *horizon*, is called *Anubis*. He is repreſented under the form of a dog, becauſe that animal watches day and night." St Clemens of Alexandria, who was well informed in the myſtic theology of the Egyptians, favours this explication. The two dogs, ſays he, (the two Anubes) are the ſymbols of two hemiſpheres which environ the terreſtrial globe. He adds in another place: Others pretend that theſe animals, the faithful guardians of men, indicate the tropics, which guard the ſun on the ſouth and on the north like porters.

According to the former of theſe interpretations,

Anubis
||
Aorasia.

the priests, regarding Anubis as the horizon, gilded his statue; to mark, that this circle, receiving the first rays of the sun, appears sparkling with brightness on his rising, and that at his setting he reflects his last rays upon the earth. They said in their sacred fables, that Anubis was the son of Osiris, but illegitimate. In fact, he only gives to the earth a borrowed light; and cannot be esteemed, like Horus, as the father of the day, or as the legitimate offspring of Osiris. It may be added, that the visible horizon turning with the sun, is his inseparable companion.

In the latter of these explications, where Anubis represents the tropics, he is also the faithful guardian of Isis and Osiris. In fact, the course of the sun and of the moon is contained between the circles wherein the solstices are performed. They neither deviate to the right nor left. These limits assigned by the Author of nature might therefore, in hieroglyphic language, be represented by a divinity with the head of a dog, who seemed to oppose their passage on the side of the two poles. The other opinion, notwithstanding, seems more natural, and to be more analogous to the ideas of the priests.

Upon the whole, it is reasonable to imagine, that Anubis at first was only a symbolical image, invented by astronomers to give a sensible expression of their discoveries; that afterwards, the people, accustomed to see it in their temples, which were the depositaries of science, adored it as a deity; and that the priests favoured their ignorance by connecting it with their religion. The worship of Anubis introduced, that of the dog became his emblem. Almost all the gods of the Gentiles have originated in this manner.

ANUS, in *Anatomy*, the lower extremity of the intestinum rectum, or orifice of the fundament.

ANVIL, a smith's utensil, serving to place the work on to be hammered or forged. The face or uppermost surface of the anvil, must be very flat and smooth, without flaws, and so hard that a file will not touch it. At one end there is sometimes a pike, bickern or beak-iron, for the rounding of hollow work. The whole is usually mounted on a firm wooden block.—Forged anvils are better than those of cast work, and the best have the upper part made of steel. Locksmiths have a smaller kind of anvil called the *stake*, which is moveable, and placed ordinarily on their work bench. Its use is for setting small cold work straight, or to cut or punch on with the cold chissel or cold punch.

ANXUR, in *Ancient Geography*, a city of the Volsci, in Latium; called *Tarracina*, by the Greeks and Latins: Now *Terracina*; situated on an eminence (Livy, Horace, Sil. Italicus). *Anxuras*, a citizen of Anxur (Livy). And the epithet *Anxurus*, a name of Jupiter, worshipped without a beard at Anxur (Virgil). Though others read *Axuras*, or *Axyrus*, without a razor. E. Long. 14. 5. Lat. 41. 18.

AONIDES, in *Mythology*, one of the many appellations of the Muses; so called from Aonia, a part of ancient Bœotia.

AORASIA, in *Antiquity*, the invisibility of the gods. The word is Greek ἀοράσια, and derived from ἀ priv. and ὁράω, *to see*. The opinion of the ancients with regard to the appearance of the gods to men, was that they never showed themselves face to face, but were known from their backs as they withdrew. Neptune assumed the form of Calchas to speak to the two Ajaces; but they knew him not till he turned his back to leave them, and discovered the god by his majestic step as he went from them. Venus appeared to Æneas in the character of a huntress; but her son knew her not till she departed from him: her divinity was then betrayed by her radiant head, her flowing robe, and her majestic pace.

Aorist
||
Aortus.

AORIST, among grammarians, a tense peculiar to the Greek language, comprehending all the tenses; or rather, expressing action in an indeterminate manner, without any regard to past, present, or future.

AORISTIA, in the sceptic philosophy, denotes that state of the mind wherein we neither assert nor deny any thing positively, but only speak of things as seeming or appearing to us in such a manner. The aoristia is one of the great points or terms of scepticism, to which the philosophers of that denomination had continual recourse by way of explication, or subterfuge. Their adversaries, the dogmatists, charged them with dogmatizing, and asserting the principles and positions of their sect to be true and certain.

AORNUS, a very high rock of India, having its name from its extraordinary height, as being above the flight of a bird. Its circuit was about 25 miles, its height 11 furlongs, and the way leading up to the top artificial and narrow. At the bottom, on one side, ran the river Indus; on the top was a fine plain, part of which was covered with a thick wood; the rest arable land, with a fountain furnishing abundance of excellent water. This rock was taken by Alexander the Great, in whose time there was a report that Hercules had attempted it in vain; however, according to Arrian, this report was without foundation. It is probable indeed, that it was raised after the place was taken, in order to magnify Alexander's exploit. While the Macedonian monarch was preparing all things necessary for the siege, an old man with his two sons, who had long lived in a cave near the summit, came and offered to show him a private way of ascending. This being readily accepted, Ptolemy, with a considerable body of light-armed troops, was despatched with them, with orders, in case they succeeded, to intrench themselves strongly upon the rock, in the wood to which the old man was to direct them, before they ventured to attack the Indians. Ptolemy exactly executed his orders; and gave notice, by a lighted torch set upon a pole, that he had got safely up. Upon this, Alexander gave immediate orders for a body of troops to attempt the passage by which the rock was commonly ascended; but they were repulsed with great slaughter. He then sent an Indian with letters to Ptolemy, desiring him, the next time an attack was made by the common way, to fall upon the enemy behind. But in the mean time, those who defended the rock attacked Ptolemy with great vigour; but were at last repulsed, though with much difficulty: but the next day, when Alexander renewed the attack, though Ptolemy attacked the Indians in the rear, the Macedonians were repulsed on both sides. At last, the king perceiving that the strength of the Indians lay in the straitness and declivity of the way by which they were attacked, caused a great quantity of trees to be felled, and with them filled the cavities between the plain on which

Aorta
Apædufia.

which the Indians were encamped and the higheſt of his own advanced poſts. The Indians at firſt derided his undertaking; but at length perceiving the ſpeed with which the work was carried on, and having felt the effects of the miſſile weapons of the Macedonians, they ſent deputies to propoſe terms of capitulation. Alexander, ſuſpecting that their deſign was only to amuſe him till they made their eſcape, withdrew his guards from the avenues. As ſoon as he knew the Indians were deſcended, he, with 700 of Ptolemy's light-armed foot, took poſſeſſion of the deſerted rock, and then made a ſignal for his forces to fall upon the flying Indians. They, ſetting up a loud ſhout, to terrified the fugitives, that numbers of them fell from the rocks and precipices, and were daſhed to pieces, while the greateſt part of the remainder were cut off in the roads.

AORTA, in *Anatomy*, the great artery which riſes immediately from the left ventricle of the heart, and is from thence diſtributed to all parts of the body. It is divided into two grand trunks, diſtinguiſhed by the epithets *aſcending* and *deſcending*. See ANATOMY.

AOUSTA, or AOST, a town of Italy, in Piedmont, and capital of the duchy of the ſame name, a biſhop's ſee, and ſubject to the king of Sardinia. It is remarkable for ſeveral monuments of the Romans, and for the birth of Anſelm archbiſhop of Canterbury. It is ſeated at the foot of the Alps, on the river Doria. E. Long. 7. 33. N. Lat. 45. 38.

AOUSTA, a territory of Piedmont, with the title of a duchy. It is a valley 30 miles in length, and extends from the paſs of St Martin's, near the frontiers of Yvree, to St Bernard. It abounds in paſtures, and all ſorts of fruits. The capital is of the ſame name.

AOUTA, the name of the paper mulberry tree at Otaheite in the South ſea, from which a cloth is manufactured that is worn by the principal inhabitants. See the article BARK.

APACHES, a people of New Mexico in North America. They are brave, reſolute, and warlike, fond of liberty, and the inveterate enemies of tyranny and oppreſſion. Of this diſpoſition the Spaniards had fatal experience towards the end of the laſt century, when they revolted againſt the Catholic king, maſſacred ſeveral of his officers, and committed the greateſt devaſtations. Ever ſince, they have remained the allies, not the ſubjects of the Spaniards; and the viceroy of Mexico has been obliged to maintain a more formidable garriſon, and a greater number of troops.

APÆDUSIA, denotes ignorance or unſkilfulneſs in what relates to learning and the ſciences. Hence alſo perſons uninſtructed and illiterate are called *apædeutæ*. The term *apædeutæ* was particularly uſed among the French in the time of Huet; when the men of wit at Paris were divided into two factions, one called by way of reproach *apædeutæ*, and the others *eruditi*. The *apædeutæ* are repreſented by Huet as perſons who, finding themſelves either incapable or unwilling to undergo a ſevere courſe of ſtudy in order to become truly learned, conſpire to decry learning, and turn the knowledge of antiquity into ridicule, thus making a merit of their own incapacity. The *apædeutæ* in effect were the men of pleaſure; the *eruditi* the men of ſtudy. The *apædeutæ* in every thing preferred the modern writers to the ancient, to ſave the neceſſity of ſtudying the latter. The *eruditi* defended the moderns, and valued themſelves greatly on their acquaintance with the ancients.

Apædufia.

APAGOGE, in *Logic*. See ABDUCTION.

APAGOGE, in the *Athenian Law*, the carrying a criminal taken in the fact to the magiſtrates. If the accuſer was not able to bring him to the magiſtrate, it was uſual to take the magiſtrate along with him to the houſe where the criminal lay concealed, or defended himſelf.

APAGOGE, in *Mathematics*, is ſometimes uſed to denote a progreſs or paſſage from one propoſition to another; when the firſt having been once demonſtrated, is afterwards employed in the proving of others.

APAGOGICAL DEMONSTRATION, an indirect way of proof, by ſhowing the abſurdity of the contrary.

APALACHIAN MOUNTAINS, more properly called the *Allegany Mountains*, have their ſouthern beginning near the bay of Mexico, in the latitude of 30°, extending northerly on the back of the Britiſh colonies, and running parallel with the ſea coaſt to the latitude of 40° north; but their diſtance from the ſea, on the weſt, is not exactly known, though it is generally thought to be above 200 miles. A great part of theſe mountains is covered with rocks, ſome of which are of a ſtupendous height and bulk; the ſoil between them is generally black and ſandy, but in ſome places differently coloured, compoſed of pieces of broken rock and ſpar, of a glittering appearance, which ſeem to be indications of minerals and ores, if proper ſearch was made for them. Cheſnuts and ſmall oaks are the trees that principally grow on theſe mountains, with ſome *chinkapin** and other ſmall ſhrubs. The graſs is thin, mixed with vetch and ſmall peaſe; and in ſome places there is very little vegetable appearance.

* Fagus pumila.

The rocks of the Apalachian mountains ſeem to engroſs one half of the ſurface. They are moſtly of a light gray colour; ſome are of a coarſe grained marble like alabaſter; others of a metallic luſtre: ſome pieces are in the form of ſlate, and brittle; others in lumps, and hard: and ſome appear with ſpangles, or covered over with innumerable ſmall ſhining ſpecks, like ſilver. Theſe frequently appear at the roots of trees when blown down. The different ſpars are found moſtly on the higheſt and ſteepeſt parts of the hills, where there is little graſs and few trees; but the greateſt part of the ſoil between the rocks is generally a dark ſandy-coloured kind of mould, and ſhallow; yet fertile, and productive of good corn, which encourages the Tallipooſes, a clan of the Cherokee Indians, to ſettle among them in latitude 34°: and they are the only Indian nation that has a conſtant reſidence upon theſe mountains.

APAMEA, or APAMIA, the name of ſeveral ancient cities.

1. One of Bithynia, formerly called *Myrlea*, from Myrlus, general of the Colophonians: deſtroyed by Philip, father of Perſeus; and given to his ally Pruſias, who rebuilt it, and called it *Apamea*, from the name of his queen Apama (Strabo). Stephanus ſays, that Nicomedes Epiphanes, ſon of Pruſias, called it after his mother; and that it had its ancient name from Myrlea, an Amazon. The Romans led a colony thither (Strabo);

Apamea bo); called *Colonia Apamena* (Pliny, Appian). The gentilitious name is *Apamæus* and *Apamenus* (Trajan in a letter to Pliny.)

Apanthropy.

2. Another *Apamea*, called *Cibotos*, of Phrygia, at ſome diſtance from the Meander (Agathodæmon); but by a coin of Tiberius, on the Meander. The name is from Apame, mother of Antiochus Soter, the founder, and the daughter of Artabazus (Strabo). The riſe, or at leaſt the increaſe, of Apamea, was owing to the ruins of Celenæ. The inhabitants were called *Apamienſes*; and, though inland, were worſhippers of Neptune. The reaſon, it has been conjectured, was, that they had ſuffered often from earthquakes, of which he was ſuppoſed the author. Mithridates gave a hundred talents towards the reſtoration of the city; which, it is ſaid, had likewiſe been overthrown in the time of Alexander. Their tribute money was remitted to them for five years on the ſame account under the emperor Tiberius. The ſubterraneous paſſage of the Lycus and the other ſtreams ſhowed that the ground had many cavities; and theſe, it has been ſurmiſed, rendered the region very liable to be ſhaken.

3. A third, on the confines of Parthia and Media, ſurnamed *Raphane* (Strabo, Pliny).

4. A fourth *Apamea*, a town of Meſene, an iſland in the Tigris (Pliny, Ammian); where a branch of the Euphrates, called the *Royal River*, falls into the Tigris (Ptolemy).

5. A fifth in Meſopotamia, on the other ſide of the Euphrates, oppoſite to Zeugma on this ſide, both founded by Seleucus, and joined by a bridge, from which the latter takes its name (Pliny, Iſidor. Characenus).

6. A ſixth *Apamea*, now *Famia*, alſo in Syria, below the confluence of the Orontes and Marſyas; a ſtrong city, and ſituated in a peninſula, formed by the Orontes and a lake. "It is here (ſays Strabo) that the Seleucidæ had eſtabliſhed the ſchool and nurſery of their cavalry." The ſoil of the neighbourhood, abounding in paſturage, fed no leſs than 30,000 mares, 300 ſtallions, and 500 elephants; inſtead of which, the marſhes of Famia at preſent ſcarcely afford a few buffaloes and ſheep. To the veteran ſoldiers of Alexander, who here repoſed after their victories, have ſucceeded wretched peaſants, who live in perpetual dread of the oppreſſions of the Turks and the inroads of the Arabs.

Apamea was alſo the ancient name of *Pella*, in the Decapolis.

APANAGE, or APPENNAGE, in the French cuſtoms, lands aſſigned by a ſovereign for the ſubſiſtence of his younger ſons, which revert to the crown upon the failure of male iſſue in that branch to which the lands are granted.

APANOMIA, a town of Santorin, an iſland in the Mediterranean ſea, called in this part by ſome the *ſea of Candia*. It has a ſpacious harbour, in the form of a half moon; but the bottom is ſo deep, that ſhips cannot anchor there. E. Long. 25. 59. N. Lat. 36. 18.

APANTHROPY, in *Medicine*, denotes a love of ſolitude, and averſion for the company of mankind. Apanthropy is by ſome reckoned among the ſymptoms, by others among the ſpecies or degrees of melancholy; and alſo paſſes for an ill indication in leucophlegmatic caſes.

APARINE, in *Botany*, a ſynonyme of the urticularia and ſeveral other plants. Aparine || Aparinit.

APARITHMESIS, in *Rhetoric*, denotes the anſwer to the protaſis or propoſition itſelf. Thus, if the protaſis be, *Appellandi tempus non erat.*—The aparithmeſis is, *At tecum anno plus vixi.*

APARTISMENUS, in the ancient poetry, an appellation given to a verſe, which comprehended an entire ſenſe or ſentence in itſelf. This is ſometimes alſo written *apartemenus*, i. e. ſuſpended, as not needing any following verſe.

APATHY, among the ancient philoſophers, implied an utter privation of paſſion, and an inſenſibility of pain. The word is compounded of α priv. and παθις, *affection*. The Stoics affected an entire apathy; they conſidered it as the higheſt wiſdom to enjoy a perfect calmneſs or tranquillity of mind, incapable of being ruffled by either pleaſure or pain. In the firſt ages of the church, the Chriſtians adopted the term *apathy* to expreſs a contempt of all earthly concerns; a ſtate of mortification, ſuch as the goſpel preſcribes. Clemens Alexandrinus, in particular, brought it exceedingly in vogue; thinking hereby to draw the philoſophers to Chriſtianity, who aſpired after ſuch a ſublime pitch of virtue. Quietiſm is only apathy diſguiſed under the appearance of devotion.

APATURIA, in antiquity, a ſolemn feaſt celebrated by the Athenians in honour of Bacchus. The word is uſually derived from απατη, *fraud*. It is ſaid to have been inſtituted in memory of a fraudulent victory obtained by Melanthus, king of Athens, over Xanthus, king of Bœotia, in a ſingle combat, which they agreed upon, to put an end to a debate between them relating to the frontiers of their countries. Hence Budæus calls it *feſtum deceptionis*, "the feaſt of deceit."

Other authors give a different etymology of this feaſt: They tell us, that the young Athenians were not admitted into the tribes on the third day of the apaturia, till their fathers had firſt ſworn that they were their own children; and that, till that time, they were ſuppoſed, in ſome meaſure, to be without fathers, απατορες; whence the feaſt, ſay they, took its name. Xenophon, on the other hand, informs us, that the relations and friends met on this occaſion, and joined with the fathers of the young people who were to be received into the tribes; and that from this aſſembly the feaſt took its name: that in απατωρια, the α, far from being a privative, being here a conjunctive, ſignifies the ſame thing with ομυ, *together*. This feaſt laſted four days: the firſt day, thoſe of the ſame tribe made merry together; and this they called δορπια. The ſecond day, which they called αναρρυσις, they ſacrificed to Jupiter and Minerva. The third day, which they called κουρεωτις, ſuch of their young men and maids as were of age were admitted into their tribes. The fourth day they called επιβας.

APAULIA, in antiquity, the third day of a marriage ſolemnity. It was thus called, becauſe the bride, returning to her father's houſe, did απαυλιζεσθαι τω νυμφιω, lodge apart from the bridegroom. Some will have the apaulia to have been the ſecond day of the marriage, viz. that whereon the chief ceremony was performed; thus called by way of contradiſtinction from the firſt day, which was called προαυλια. On the

Ape
||
Apelles.

the day called απαυλια (whenever that was), the bride preſented her bridegroom with a garment called απαυλητηρια.

APE, in *Zoology*, the general Engliſh name of a very numerous race of animals, the natural hiſtory of which is given at large under the article SIMIA; comprehending *Apes*, properly ſo called, or ſuch as want tails; and *Monkeys* and *Baboons*, or ſuch as have tails, the former *long*, and the other *ſhort*, ones. See SIMIA.

Sea APE, a name given by Steller to a marine animal which he ſaw on the coaſt of America, and is thus deſcribed *. "The head appeared like that of a dog, with ſharp and upright ears, large eyes, and with both lips bearded: the body round and comoid; the thickeſt part near the head: the tail forked; the upper lobe the longeſt: the body covered with thick hair, gray on the back, reddiſh on the belly. It ſeemed deſtitute of feet. It was extremely wanton, and played a multitude of monkey tricks. It ſometimes ſwam on one ſide, ſometimes on the other ſide of the ſhip, and gazed at it with great admiration. It made ſo near an approach to the veſſel, as almoſt to be touched with a pole; but if anybody moved, it inſtantly retired. It would often ſtand erect for a conſiderable ſpace, with one-third of its body above water; then dart beneath the ſhip, and appear on the other ſide; and repeat the ſame thirty times together. It would frequently ariſe with a ſea plant, not unlike the bottle gourd, toſs it up, and catch it in its mouth, playing with it numberleſs fantaſtic tricks.

* *Hiſt. of Kamtſchatka*, p. 136.

APELYTES, Chriſtian heretics in the ſecond century, who affirmed that Chriſt received a body from the four elements, which at his death he rendered back to the world, and ſo aſcended into heaven without a body.

APELLA, among phyſicians, a name given to thoſe whoſe prepuce is either wanting or ſhrunk, ſo that it can no longer cover the glans. Many authors have ſuppoſed this ſenſe of the word *Apella* warranted from the paſſage in Horace, *credat Judæus Apella non ego*. But, according to Salmaſius and others, *Apella* is the proper name of a certain Jew, and not an adjective ſignifying *circumciſed*.

APELLES, one of the moſt celebrated painters of antiquity. He was born in the iſle of Cos, and flouriſhed in the time of Alexander the Great, with whom he was in high favour. He executed a picture of this prince, holding a thunderbolt in his hand: a piece, finiſhed with ſo much ſkill and dexterity, that it uſed to be ſaid there were two Alexanders; one invincible, the ſon of Philip; the other inimitable, the production of Apelles. Alexander gave him a remarkable proof of his regard: for when he employed Apelles to draw Campaſpe, one of his miſtreſſes, having found that he had conceived an affection for her, he reſigned her to him; and it was from her that Apelles is ſaid to have drawn his Venus Anadyomene.

One of Apelles's chief excellencies was his making his pictures exactly reſemble the perſons repreſented; inſomuch that the phyſiognomiſts are ſaid to have been able to form a judgment of the perſon's deſtiny as readily from his portraits as if they had ſeen the originals. But what is called *grace* was the characteriſtic of this artiſt. His pencil was ſo famous for drawing fine lines, that Protogenes diſcovered by a ſingle line that Apelles had been at his houſe. Protogenes lived at Rhodes: Apelles ſailed thither, and went to his houſe with great eagerneſs, to ſee the maſter of that artiſt who was known to him only by name. Protogenes was gone from home: but an old woman was left watching a large piece of canvaſs, which was fitted in a frame for painting. She told Apelles that Protogenes was gone out; and aſked him his name, that ſhe might inform her maſter who had inquired for him. "Tell him (ſays Apelles) he was inquired for by this perſon;"—at the ſame time taking up a pencil, he drew on the canvaſs a line of great delicacy. When Protogenes returned, the old woman acquainted him with what had happened. That artiſt, upon contemplating the fine ſtroke of the line, immediately pronounced that Apelles had been there; for to ſuch a work could be produced by no other perſon. Protogenes, however, himſelf drew a finer line of another colour: and, as he was going away, ordered the old woman to ſhow that line to Apelles if he came again; and to ſay, "This is the perſon for whom you are inquiring." Apelles returned, and ſaw the line: he would not for ſhame be overcome; and therefore, in a colour different from either of the former, he drew ſome lines ſo exquiſitely delicate, that it was utterly impoſſible for finer ſtrokes to be made. Protogenes now confeſſed the ſuperiority of Apelles, flew to the harbour in ſearch of him, and reſolved to leave the canvaſs with the lines on it for the aſtoniſhment of future artiſts.

Apelles ſhowed great liberality of mind towards Protogenes. With ideas enlarged by education and literature, he was incapable of harbouring little jealouſies of noble competitors; on the contrary, he was the firſt who made the works of Protogenes to be valued as they deſerved among the Rhodians. He acknowledged that Protogenes was in ſome reſpects ſuperior to himſelf; but that in one particular himſelf excelled, viz. in knowing when to take his hand from the picture; an art which Protogenes had not yet learned, and therefore over-worked his pieces. Apelles equally diſapproved of too elaborate diligence, or too haſty negligence in execution. A ſtudied work of Protogenes he eſteemed leſs on the one account; and on the other, when a ſilly painter once brought him a picture, and ſaid, "This I painted in a hurry,"—he replied, "Though you had not told me ſo, I perceived it was painted in haſte: but I wonder you could not execute more ſuch pieces in the ſame time."

There are two ſtories related of Apelles, which ſhow him to be at once an artiſt of modeſty, in amending even trifling improprieties, when pointed out to him by competent judges; and yet of ſelf-confidence ſufficient to make him know the perfection and value of his own paintings. It was cuſtomary with Apelles to expoſe to public view the works which he had finiſhed, and to hide himſelf behind the picture, in order to hear the remarks paſſed on it by perſons who chanced to view it. He once overheard himſelf blamed by a ſhoemaker for a fault in the ſlippers of ſome picture: he corrected the fault which the man had noticed: but on the day following the ſhoemaker began to animadvert on the leg; upon which Apelles with ſome anger looked out from behind the canvaſs, and bade him

keep

Apelles keep to his own province. "Ne ſutor ultra crepidam." It is well known that Alexander forbade any one beſides Apelles to paint his portrait. We are not, however, to conclude from this that Alexander was a more ſkilful judge of painting than he was of poetry. Like Auguſtus, he cheriſhed the fine arts more from vanity than taſte. A remarkable proof is given of this prince's inability to diſcern merit, and of the painter's freedom in expreſſing the mortification he felt, when a work of his was not ſufficiently commended. "Alexander (ſays Ælian, lib. ii. c. 3. Var. Hiſt.) having viewed the picture of himſelf which was at Epheſus, did not praiſe it as it deſerved. But when a horſe was brought in, and neighed at ſeeing the figure of a horſe in the picture, as though it had been a real horſe; *O king!* (ſaid Apelles) *this horſe ſeems to be by far a better judge of painting than you.*" It happened more than once that the horſes drawn by him were miſtaken for real ones, by living horſes which ſaw and neighed at the pictures. In his finiſhing a drawing of this animal, a remarkable circumſtance is related of him. He had painted a horſe returning from battle, and had ſucceeded to his wiſhes in deſcribing every other mark that could indicate a mettleſome ſteed, impatient of reſtraint; there was wanting nothing but a foam of a bloody hue iſſuing from the mouth. He again and again endeavoured to expreſs this, but his attempts were unſucceſsful. At laſt, with vexation, he threw againſt the reins of the horſe a ſponge which had in it many colours; a mixture of which coming out of the ſponge, and tinging the reins, produced the very effect deſired by the painter.

The works of Apelles were all admired; but the moſt celebrated were the picture of Alexander in the temple of Diana at Epheſus, and that of Venus emerging from the ſea. Alexander was drawn with thunder in his hand; and ſuch relief was produced by the chiaro ſcuro in this piece, that the fingers ſeemed to ſhoot forward, and the thunderbolt to be out of the picture. His Venus Αναδυομενη was eſteemed the moſt exquiſite figure which the pencil could create: it is therefore extolled by the Roman poets Propertius and Ovid; and the poet of Sidon, Antipater, has left us the following Greek epigram on it:

Των αναδυομενων απο μαλερος αξιε θαλαττης
Κυπριν, Απελλειε μοχθον ορα γραφιδος,
Ως χειρι συμμαρψασα διωδεχον υδατι καλαν
Εκθλιβει νοτερων αφρον απο πλοκαμων,
Αυται νυν ερεσσιν Αθηναιη τε και Ηρη
"Ουκ ειν σοι μορφας εις ερινι ερχομεθα."

Anth. iv. 12.

Graceful as from her natal ſea ſhe ſprings,
Venus, the labour of Apelles, view:
With preſſing hand her humid locks ſhe wrings,
While from her treſſes drips the frothy dew:
Ev'n Juno and Minerva now declare,
"No longer we contend whoſe form's moſt rare."

APENE, in antiquity, a kind of chariot wherein the images of the gods were carried in proceſſion on certain days, attended with a ſolemn pomp, ſongs, hymns, dancing, &c. It was very rich, made ſometimes of ivory, or of ſilver itſelf, and variouſly decorated.

APENNINUS, now the *Apennine*; a mountain, or ridge of mountains, running through the middle of Italy, from north-weſt to ſouth-weſt for 700 miles, in the form of a creſcent (Pliny); beginning at the Alps in Liguria, or the Rivierra di Genoa; and terminating at the ſtrait of Meſſana, or at Reggio, and the promontory Leucopetra; and ſeparating, as by a back or ridge, the Adriatic from the Tuſcan ſea (Pliny, Strabo, Ptolemy, Polybius, Vitruvius). This mountain, though high, is greatly ſhort of the height of the Alps. Its name is Celtic, ſignifying a *high mountain*.

APENRADE, a town of Denmark in the duchy of Sleſwick, ſeated at the bottom of a gulf in the Baltic ſea, between Flenſbourg and Hadaſchleben. It is 25 miles north from Sleſwick. E. Long. 9. 28. N. Lat. 55. 4.

APENZEL, a town of Switzerland, in the canton of the ſame name, ſeated on the river Chus, E. Long. 9. 1. N. Lat. 47. 31. The canton itſelf, which was allied to the others in 1513, conſiſts only of three or four valleys; having the town and abbey of St Gall on the north; the county of Toggenburg on the weſt; the lordſhip of Sax in the canton of Zurich, and that of Gambs in the canton of Schweitz, on the ſouth; and the Rheinthall, or Rhine-valley, on the eaſt. Its greateſt length is about thirty miles, and its breadth about twenty. It yields good paſturage, and conſequently is not deſtitute of cattle, milk, butter, or cheeſe. Conſiderable quantities alſo of wheat, rye, barley, oats, beans, peaſe, flax, and wine, are produced in it; beſides a great deal of fruit, wood, and turf; with mineral waters, and warm baths. There are many mountains in the canton, the higheſt of which is that called the *Hoheſantis*, or the *Hohe Meſmer*, which commands a proſpect of a prodigious extent. There are alſo ſeveral lakes and rivers. The inhabitants, who are partly Proteſtants, and partly Roman Catholics, ſubſiſt chiefly by their manufactures of linen, crape, fuſtian, and thread, or by bleaching, and the ſale of their cattle, butter, cheeſe, horſes, wood, and coal. Of the twenty-three pariſhes in the canton, four are Popiſh, and nineteen Proteſtant. Before the Reformation, the inhabitants were ſubject to the abbot of St Gall; but they then ſhook off his yoke, and united themſelves with the other cantons: after that, however, there were violent animoſities between the Papiſts and Proteſtants, the former continually perſecuting the latter, till at laſt, in 1587, by the mediation of the other cantons, the two parties came to an accommodation, by which certain diſtricts were aſſigned to each party, whereas before they lived promiſcuouſly together; and though theſe two diviſions now conſtitute but one canton, yet each forms a diſtinct community or free ſtate, ſending its particular repreſentatives to the diets of the confederacy, and having its ſeparate councils and officers. In ſpirituals, the Papiſts are ſubject to the biſhop of Conſtance, but the Proteſtants to their own conſiſtory. The militia of the former does not exceed 3000, whereas thoſe of the latter amount to 10,000.

APEPSIA, (from α negative, and πεπτω, to *digeſt*) Indigeſtion.

Abſtemiouſneſs and exceſs are alike cauſes of indigeſtion. An over-diſtenſion of the ſtomach may in ſome meaſure injure its proper tone; and long faſting, by inducing a bad quality in the juices ſecerned into the

Aper ‖ Aphaſia.

the ſtomach, renders it feeble, and generates wind. Hard drinking, and any of the cauſes of an anorexy, alſo injure digeſtion.

The columbo root is ſaid to be particularly uſeful when the ſtomach is languid, the appetite defective, digeſtion with difficulty carried on, or when a naufea with flatulency attends. It is preſcribed in ſubſtance, with any grateful aromatic, or infuſed in Madeira wine, now and then interpoſing gentle doſes of the tincture of rhubarb.

A mixture of muſtard ſeed with the columbo root is of admirable utility in complaints of this kind; particularly where acidity and flatulence prevail much in the primæ viæ.

APER, in *Zoology*, a ſynonyme of the ſus ſcrofa. See Sus.

APERIENTS, in the *Materia Medica*, an appellation given to ſuch medicines as facilitate the circulation of the humours by removing obſtructions. The five aperient roots of the ſhops are, ſmallage, fennel, aſparagus, parſley, and butchers broom.

APERTURE, the opening of any thing, or a hole or cleft in any continuous ſubject.

Aperture, in *Geometry*, the ſpace between two right lines which meet in a point and form an angle.

Aperture, in *Optics*, a round hole in a turned bit of wood or plate of tin, placed within the ſide of a teleſcope or microſcope, near to the object glaſs, by means of which more rays are admitted, and a more diſtinct appearance of the object is obtained.

Apertures, or *Apertions*, in *Architecture*, are uſed to ſignify doors, windows, &c.

APETALOSE, or Apetalous, among *Botaniſts*, an appellation given to ſuch plants as have no flower leaves.

APEX, the vertex or ſummit of any thing.

Apex, in antiquity, the creſt of a helmet, but more eſpecially a kind of cap worn by the flamens.

Apex, among grammarians, denotes the mark of a long ſyllable, falſely called a *long accent*.

APHACA, in *Ancient Geography*, the name of a place in Syria, ſituated between Heliopolis and Byblus, near Lebanon; infamous for a temple of Venus, called *Aphacetis*, near which was a lake, round which fire uſually burſt forth, and its waters were ſo heavy, that bodies floated on them. The temple was deſtroyed by Conſtantine, as being a ſchool of incontinence, (Euſebius.) The name is of Syriac origin, ſignifying *embraces*.

APHÆRESIS, in *Grammar*, a figure by which a letter or ſyllable is cut off from the beginning of a word. Thus *ciconia*, by aphæreſis, is written *conia; contemnere, temnere; omittere, mittere*, &c.

A like retrenchment at the end of a word is called apocope.

Aphæresis, in *Medicine*, denotes a neceſſary taking away or removal of ſomething that is noxious.—In ſurgery, it ſignifies an operation whereby ſomething ſuperfluous is taken away.

APHANES, parsley root. See Botany *Index*.

APHASA, (from α, and φημι, "I ſpeak,") in the ſceptic philoſophy, denotes a ſtate of doubt, wherein a perſon not knowing what to determine on, it is beſt for him to be ſilent. In this ſenſe, *aphaſia* ſtands oppoſed to *phaſis*, under which are included both aſſertion and negation.

Aphek ‖ Aphis.

APHEK, the name of ſeveral cities mentioned in Scripture. 1. Aphek in the tribe of Judah, where the Philiſtines encamped when the ark was brought from Shiloh, which was taken by them in battle, 1 Sam. iv. 1, 2, &c. It is thought to be the ſame with Aphekah mentioned in Joſh. xv. 53. 2. Aphek in the valley of Jezreel, where the Philiſtines encamped while Saul and his army were near Jezreel, upon the mountains of Gilboa, 1 Sam. xxix. 1, &c. 3. Aphek, a city belonging to the tribe of Aſher, near the country of the Sidonians; (Joſh. xix. 30. and xiii. 4.) 4. Aphek, a city of Syria, one of the principal in Benhadad's kingdom, near which the battle was fought between Ahab and Benhadad, wherein the Syrians were worſted; and whereof, as they retreated with precipitation into the city, the walls fell upon them, and cruſhed in pieces 27,000, (1 Kings xx. 26, *et ſeq.*) This city lay between Heliopolis and Byblus.

APHELIUM, or Aphelion, in *Aſtronomy*, is that point in any planet's orbit, in which it is fartheſt diſtant from the ſun, being that end of the greater axis of the elliptical orbit of the planet moſt remote from the focus where the ſun is.

APHIOM, karahissart, a town of Natolia, in Aſiatic Turkey; it is named *Aphiom*, becauſe it produces a great deal of opium, called *aphiom* by the Turks. E. Long. 32. 18. N. Lat. 38. 35.

APHIS, the puceron, vine-fretter, or plant-louse. See Entomology *Index*.

Linnæus enumerates 33 ſpecies of the aphis, all of them inhabitants of particular plants, from which their trivial names are taken; as aphis *ribi*, *ulmi*, *roſæ*, &c. And he adds, that there ſeems to be a greater variety of plants producing aphides than there are different ſorts of this inſect. But ſome late obſervers have been able to diſtinguiſh more than double the above number of ſpecies; and it is probable that many more remain ſtill to be added, as many of the ſame kind of plants are found to ſupport two or three quite different ſorts of aphides. Thus the plum tree has two ſorts very diſtinct from each other; one of a yelloviſh green, with a round ſhort body; the other of a blueiſh green, as it were enamelled with white, and the ſhape more oblong. On the gooſeberry buſh and currant the ſame aphides may be found; but each of theſe is inhabited by two very different ſpecies: the one being of a duſky green, with a ſhort plump body; the other of a paler green, the body more taper, and tranſverſely wrinkled. The roſe tree, again, ſupports not leſs than three diſtinct ſpecies: the largeſt is of a deep green, having long legs of a browniſh caſt, with the joints of a very dark brown, as alſo are the horns and antennæ; a ſecond ſort is of a paler green, has much ſhorter legs, and a more flat body; the third ſort is of a pale red, its body tranſverſely wrinkled, and is moſt frequently on the ſweet-briar.

The extraordinary nature of theſe inſects has for ſome time paſt juſtly excited the wonder and attention of naturaliſts. They were long ranked among the animals which had been claſſed with the true androgynes ſpoken of by Mr Breynius; for having never been catched copulating, it was haſtily concluded that they

Aphis. they multiplied without copulation. This, however, was but a doubt, or at beſt a mere ſurmiſe: but this ſurmiſe was believed and adopted by Mr Reaumur; and though he ſupported it by ſome obſervations peculiar to himſelf, the queſtion remained ſtill undecided, till Mr Bonnet ſeemed to have cleared it up in the affirmative, by taking and ſhutting up a young aphis at the inſtant of its birth, in the moſt perfect ſolitude, which yet brought forth in his ſight 95 young ones. The ſame experiment being made on one of the individuals of this family, that had been tried with its chief, the new hermit ſoon multiplied like its parent; and one of this third generation, in like manner brought up in ſolitude, proved no leſs fruitful than the former. Repeated experiments, in this reſpect, as far as the fifth or ſixth generation, all uniformly preſenting the obſerver with *fecund virgins*, were communicated to the Royal Academy of Sciences; when an unforeſeen and very ſtrange ſuſpicion, imparted by Mr Trembley to Mr Bonnet engaged him anew in a ſeries of ſtill more painful experiments than the foregoing. In a letter which that celebrated obſerver wrote to him from the Hague, the 27th January 1741, he thus expreſſes himſelf: "I formed, ſince the month of November, the deſign of rearing ſeveral generations of ſolitary pucerons, in order to ſee if they would all equally bring forth young. In caſes ſo remote from uſual circumſtances, it is allowed to try all ſorts of means; and I argued with myſelf, Who knows but that one copulation might ſerve for ſeveral generations?" This "*who knows*," to be ſure, was next to avouching nothing; but as it came from Mr Trembley, it was ſufficient to perſuade Mr Bonnet that he had not gone far enough in his inveſtigation. If the fecundity of aphides was owing to the ſecret copulation ſuggeſted by Mr Trembley; this copulation ſerved at leaſt five or more ſucceſſive generations. Mr Bonnet therefore reared to the amount of the tenth generation of ſolitary aphides, and had the patience to keep an account of the days and hours of the births of each generation. In ſhort, it was diſcovered, That they are really diſtinguiſhed by ſexes: That there are males and females amongſt them, whoſe amours are the leaſt equivocal of any in the world: that the males are produced only in the tenth generation, and are but few in number: that theſe, ſoon arriving at their full growth, copulate with the females: that the virtue of this copulation ſerves for ten generations: that all theſe generations, except the firſt, (from the fecundated eggs), are produced viviparous; and all the individuals are females, except thoſe of the laſt generation, among whom, as we have already obſerved, ſome males make their appearance to lay the foundation of a freſh ſeries.—Theſe circumſtances have been confirmed by other naturaliſts. In particular we have a curious and accurate detail of them by Dr Richardſon of Rippon, in the Philoſophical Tranſactions, vol. xi. art. 22. an extract of which we ſhall here inſert, in order to give the reader as full an inſight into the nature of theſe ſingular inſects, as can be done by a mere detail of facts in themſelves utterly unaccountable.

"The great variety of ſpecies which occur in the inſects now under conſideration, may make an inquiry into their particular nature ſeem not a little perplexed; having them, however, ſkilfully reduced under their proper genus, the difficulty is by this means conſiderably diminiſhed. All the inſects comprehended under any diſtinct genus, we may reaſonably ſuppoſe to partake of one general nature; and, by diligently examining any of the particular ſpecies, may thence gain ſome inſight into the nature of all the reſt. With this view I have choſen, out of the various ſorts of aphides, the largeſt of thoſe found on the roſe tree; not only as its ſize makes it the more conſpicuous, but as there are few others of ſo long a duration. This ſort appearing early in the ſpring, continues late in the autumn; while ſeveral are limited to a much ſhorter term, in conformity to the different trees and plants from whence they draw their nouriſhment. Aphis.

1. "If at the beginning of February the weather happens to be ſo warm as to make the buds of the roſe tree ſwell and appear green; ſmall aphides are frequently to be found upon them, not larger than the young ones in ſummer when firſt produced. But there being no old ones to be found at this time of the year, which in ſummer I had obſerved to be viviparous, I was formerly not a little perplexed by ſuch appearances, and almoſt induced to give credit to the old doctrine of equivocal generation. That the ſame kind of animal ſhould at one time of the year be viviparous, and at another time oviparous, was an opinion I could then by no means entertain. This, however, frequent obſervation has at laſt convinced me to be fact; having found thoſe aphides which appear early in the ſpring, to proceed from ſmall black oval eggs, which were depoſited on the laſt year's ſhoots in autumn; though when it happens that the inſects make too early an appearance, I have obſerved the greateſt part to ſuffer from the ſharp weather that uſually ſucceeds, by which means the roſe trees are ſome years in a manner freed from them.

"Thoſe which withſtand the ſeverity of the weather ſeldom come to their full growth before the month of April; at which time they uſually begin to breed, after twice caſting off their exuviæ or outward covering. It appears then that they are all females, which produce each of them a very numerous progeny, and that without having intercourſe with any male inſect. As I obſerved before, they are viviparous; and what is equally uncommon, the young ones all come into the world backwards. When they firſt come from the parent they are enveloped by a thin membrane, having in this ſituation the appearance of an oval egg; which, I apprehend, muſt have induced Reaumur to ſuſpect that the eggs diſcovered by Bonnet were nothing more than mere abortions. Theſe egg-like appearances adhere by one extremity to the mother; while the young ones contained in them extend the other; by that means gradually drawing the ruptured membrane over the head and body to the hind feet. During this operation, and for ſome time after, by means of ſomething glutinous, the fore part of the head adheres to the vent of the parent. Being thus ſuſpended in the air, it ſoon frees itſelf from the membrane in which it was confined, and, after its limbs are a little ſtrengthened, is ſet down on ſome tender ſhoot, and then left to provide for itſelf.

2. "In the ſpring months, there appear on the roſe trees but two generations of aphides, including thoſe which immediately proceed from the laſt year's eggs; the warmth of the ſummer adds ſo much to their fertility,

Aphis. lity, that no leſs than five generations ſucceed one another in the interval. One is produced in May, which caſts off its covering; while the months of June and July each ſupply two more, which caſt off their coverings three or four times, according to the different warmth of the ſeaſon. The frequent change of the outward covering is the more extraordinary, as it is the oftenest repeated when the inſects come the ſooneſt to their growth; which I have ſometimes obſerved to happen in ten days, where warmth and plenty of nouriſhment have mutually conſpired. From which conſiderations I am thoroughly convinced that theſe various coverings are not connate with the inſect; but that they are, like the ſcarf ſkin, ſucceſſively produced.

"Early in the month of June, ſome of the third generation which were produced about the middle of May, after caſting off their laſt covering, diſcover four erect wings, much longer than their bodies; and the ſame is obſervable in all the ſucceeding generations, which are produced during the ſummer months; without, however, diſtinguiſhing any diverſity of ſex, as is uſual in ſeveral other kinds of inſects. For ſome time before the aphides come to their full growth, it is eaſy to diſcover which of them will have wings, by a remarkable fulneſs of the breaſt, which, in the others, is hardly to be diſtinguiſhed from the body. When the laſt covering is rejected, the wings which were before folded up in a very narrow compaſs, gradually extend themſelves in a moſt ſurpriſing manner, till their dimenſions are at laſt very conſiderable. But theſe winged ones have the peculiarity, that the number of them does not ſeem ſo much to depend on their original ſtructure, as on the quantity or quality of the nouriſhment with which they are ſupplied; it being frequently obſerved, that thoſe on a ſucculent ſhoot have few or none with wings among them, while others of the ſame generation, on a leſs tender branch, are moſt of them winged; as if only the firſt rudiments of wings were compoſed in the former, while nature thought proper to expand them in the latter, that they might be more at liberty to ſupply their wants.

"The increaſe of theſe inſects in the ſummer time is ſo very great, that, by wounding and exhauſting the tender ſhoots, they would frequently ſuppreſs all vegetation, had they not many enemies which reſtrain them. To enumerate the variety of other inſects that in their worm and fly ſtate are conſtantly deſtroying them, would exceed the bounds of the preſent deſign: there is one, however, ſo ſingular in the manner of executing its purpoſe, that I cannot paſs by it without ſome further notice. This is a very ſmall black ichneumon fly, with a ſlender body and very long antennæ, which darts its pointed tail into the bodies of the aphides, at the ſame time depoſiting an egg in each. This egg produces a worm, which feeds upon the containing inſect till it attains its full growth; when it is uſually changed to that kind of fly from whence it came. In this, however, it is ſometimes prevented by another ſort of ſmall black fly, which wounds this worm through its pearl-like habitation; and by laying one of its eggs therein, inſtead of the former fly, produces its own likeneſs. I muſt, however, further obſerve, notwithſtanding theſe inſects have many enemies, they are not without friends; if we may conſider thoſe as ſuch who are very officious in their attendance, for the good things they expect to reap thereby. The ant and the bee are both of this kind, collecting the honey in which the aphides abound; but with this difference, that the ants are conſtant viſitors, the bee only when flowers are ſcarce. To which let me alſo add, that the ants will ſuck in the delicious nectar while the aphides are in the act of diſcharging it from the anus; but the bees only collect it from the leaves on which this honey dew has fallen. Aphis.

3. "In the autumn I find three more generations of aphides to be produced; two of which make their appearance in the month of Auguſt, and the third uſually appears before the middle of September. As the two firſt differ in no reſpect from thoſe which we meet with in ſummer, it would be waſting time to dwell any longer upon them; but the third, differing greatly from all the reſt, demands our giving it a more ſerious attention. Though all the aphides which have hitherto appeared were females, in this tenth generation are found ſeveral male inſects; not that they are by any means ſo numerous as the females, being only produced by a ſmall number of the former generation. To which I muſt further add, that I have obſerved thoſe which produced males, previouſly to have produced a number of females; which in all reſpects reſembling thoſe already deſcribed, I ſhall decline taking into any further conſideration.

"The females have at firſt altogether the ſame appearance with thoſe of the former generations; but in a few days their colour changes from a green to a yellow, which is gradually converted into an orange colour before they come to their full growth. They differ likewiſe in another reſpect, at leaſt from thoſe which occur in the ſummer, that all thoſe yellow females are without wings. The male inſects are, however, ſtill more remarkable; their outward appearance readily diſtinguiſhing them from the females of this and of all other generations. When firſt produced, they are not of a green colour like the reſt, but of a reddiſh brown; and have afterwards, when they begin to thicken about the breaſt, a dark line along the middle of the back. Theſe male inſects come to their full growth in about three weeks time, and then caſt off their laſt covering; the whole inſect being, after this operation, of a bright yellow colour, the wings only excepted. But after this they ſoon change to a darker yellow; and in a few hours to a very dark brown; if we except the body, which is ſomething lighter coloured, and has a reddiſh caſt. They are all of the winged ſort: and the wings, which are white at firſt, ſoon become tranſparent, and at length appear like very fine black gauze.

"The males no ſooner come to maturity than they copulate with the females; in which act they are readily diſcovered, as they remain in conjunction for a conſiderable time, and are not eaſily diſturbed. The commerce between them continues the whole month of October, and may be obſerved at all times of the day, though I have found it moſt frequent about noon; eſpecially when the weather is moderately warm, and the ſun overcaſt. The females, in a day or two after their intercourſe with the males, I have obſerved to lay their eggs; which they uſually do near the buds, when they are left to their own choice. Where there are a number crowded together, they of courſe inter-

Aphis
||
Aphrodiſia.

fere with each other: in which caſe they will frequently depoſite their eggs on other parts of the branches, or even on the ſpines with which they are beſet."

Theſe inſects are found in great numbers not only on the ſtems and leaves, but even upon roots of many trees and plants. Thoſe trees that are moſt loaded with the inſects, as already obſerved, ſuffer greatly from them. The plant-lice thruſt their ſharp-pointed roſtrum into the ſubſtance of the leaf to draw out their ſuſtenance, which warps the ſtems and leaves, and occaſions in the latter cavities underneath, and ſwellings above; nay, even in ſome, a kind of hollow gall filled with inſects, as is often ſeen on elm leaves.

It appears aſtoniſhing that the ſlight puncture of ſo ſmall an animal ſhould ſo greatly disfigure a plant; but it muſt be remembered, that plant-lice always live in numerous aſſociations, which increaſe viſibly by the prodigious fruitfulneſs of thoſe inſects; ſo that although each puncture be ſlight, yet the number of them is ſo great, ſo reiterated, that it is no longer a wonder the leaves ſhould be disfigured. Lovers of gardening and plants are extremely anxious to free and cleanſe their trees from this vermine; but their care often proves unavailing, the inſect is ſo fruitful that it ſoon produces a freſh colony. The beſt and ſureſt method of extirpating it is to put on the trees infeſted with them ſome larvæ of the plant-louſe lion, or aphidivorous flies; for thoſe voracious larvæ deſtroy every day a great number of the inſects, and that with ſo much the more facility, as the latter remain quiet and motionleſs in the neighbourhood of thoſe dangerous enemies, who range over heaps of plant-lice, which they gradually waſte and diminiſh.

APHLASTUM, in the ancient navigation, a wooden ornament, ſhaped like a plume of feathers, faſtened on the gooſe's or ſwan's neck uſed by the ancient Greeks in the heads of their ſhips. The aphlaſtum had much the ſame office and effect in a ſhip that the creſt had on the helmet. It ſeems alſo to have had this further uſe, viz. by the waving of a party-coloured ribband faſtened to it, to indicate from what quarter the wind blew.

APHONIA, among phyſicians, ſignifies a ſuppreſſion or total loſs of voice. It is never a primary diſeaſe; but a conſequence of many different diſorders. The cure is to be effected by removing the diſorder from whence the aphonia proceeds.

APHORISM, a maxim or principle of a ſcience; or a ſentence which comprehends a great deal in a few words. The word comes from ἀφορίζω, *I ſeparate*; q. d. a choice or ſelect ſentence. The term is chiefly uſed in medicine and law. We ſay the aphoriſms of Hippocrates, of Sanctorius, of Boerhaave, &c. aphoriſms of the civil law, &c.

APHRACTI, in the ancient military art, denotes open veſſels, without decks or hatches, furniſhed only at head and ſtern with croſs planks, whereon the men ſtood to fight.

APHRODISIA, in antiquity, feſtivals kept in honour of Venus, the moſt remarkable of which was that celebrated by the Cyprians. At this ſolemnity ſeveral myſterious rites were practiſed: all who were initiated to them offered a piece of money to Venus as a harlot, and received as a token of the goddeſs's favour a meaſure of ſalt, and a φαλλὸς; the former, becauſe ſalt is a concretion of ſea water, to which Venus was thought to owe her birth; the latter, becauſe ſhe was the goddeſs of wantonneſs. Aphrodiſiacs
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Apis.

APHRODISIACS, among phyſicians, medicines which were ſuppoſed to increaſe the quantity of ſemen, and create an inclination to venery.

APHRODITA. See HELMINTHOLOGY *Index*.

APHRODITE, in *Mythology*, a name of Venus, derived from ἀφρὸς *froth*; becauſe, according to the poets, Venus is ſuppoſed to have been produced from the froth or foam of the ſea.

APHRONITRE, in *Natural Hiſtory*, a name given by the ancients to a particular kind of natrum.

APHTHÆ, in *Medicine*, ſmall, round, and ſuperficial ulcers ariſing in the mouth. See MEDICINE *Index*.

APHTHARTODOCETÆ, a ſect, ſworn enemies of the council of Chalcedon. The word is derived from ἀφθαρτος, *incorruptible*, and δοκεω, *I imagine*; and was given them, becauſe they imagined the body of Jeſus Chriſt was incorruptible and impaſſible, and not capable of death. They aroſe among the Eutychians, and made their appearance in the year 535.

APHYLLANTHES, LEAFLESS FLOWER, or BLUE MONTPELIER PINK. See BOTANY *Index*.

APIARY, a place where bees are kept. See the article BEE.

APIASTER, in *Ornithology*, the trivial name of a ſpecies of the merops. See MEROPS, ORNITHOLOGY *Index*.

APICES, in *Botany*, the ſame with ANTHERÆ.

APICIUS. There were at Rome three of that name, famous for their gluttony. The ſecond is the moſt celebrated of the three. He lived under Tiberius, ſpent immenſe ſums on his belly, and invented divers ſorts of cakes which bore his name. He kept as it were a ſchool of gluttony at Rome. After having ſpent two millions and a half in entertainments, finding himſelf very much in debt, he examined into the ſtate of his affairs; and ſeeing that he had but 250,000 livres remaining, he poiſoned himſelf, out of apprehenſion of ſtarving with ſuch a ſum. He had proſtituted himſelf when very young to Sejanus.

APINA, or *Apinæ*, a town of Apulia, built by Diomedes, as was alſo Tricæ (Pliny). *Apinæ* and *Tricæ* is a proverbial ſaying for things trifling and of no value (Martial); and *Apinarii* was the appellation for triflers or buffoons, (Trebellius Pollio).

APION, a famous grammarian, born in Egypt, was a profeſſor at Rome in the reign of Tiberius. He had all the arrogance of a mere pedant, and amuſed himſelf with difficult and inſignificant inquiries. One of his principal works are his Antiquities of Egypt.

APIS, in *Mythology*, a divinity worſhipped by the ancient Egyptians at Memphis. It was an ox, having certain exterior marks; in which animal the ſoul of the great Oſiris was ſuppoſed to ſubſiſt. The animal had the preference to all others, as being the ſymbol of agriculture, the improvement of which that prince had ſo much at heart.

According to ſeveral learned writers on the Egyptian religion, Apis was only a ſymbolical deity. "Amongſt the animals conſecrated to ancient rites (ſays Ammianus Marcellinus), Mnevis and Apis are the moſt celebrated; the firſt is an emblem of the ſun, the ſecond

Apis. cond of the moon." Porphyry tells us, that Apis bore the characteriſtic ſigns of the two ſtars; and Macrobius, who confirms this opinion, adds, that he was equally conſecrated to them both.

This bull, become the object of public adoration, it may be ſuppoſed, could not be born like other animals; accordingly the prieſts publiſhed that his origin was celeſtial. "An Apis is ſeldom born, (ſays Pomponius Mela). He is not produced by the ordinary laws of generation. The Egyptians ſay he owes his birth to celeſtial fire." Plutarch explains this paſſage: "The prieſts pretend that the moon diffuſes a generative influence, and as ſoon as a cow who takes the bull is ſtruck by it, ſhe conceives an Apis. Accordingly we diſcover in him the ſigns of that ſtar."

Such were the fables induſtriouſly ſpread by thoſe who preſided over the divine inſtitutions. The vulgar, to whom this emblematical deity preſaged abundance, received them eagerly, and implicitly believed them. Pliny has deſcribed the characters which diſtinguiſhed this ſacred bull: "A white ſpot, reſembling a creſcent, on the right ſide, and a lump under the tongue, were the diſtinguiſhing marks of Apis." When a cow, therefore, which was thought to be ſtruck with the rays of the moon, produced a calf, the ſacred guides went to examine it, and if they found it conformable to this deſcription, they announced to the people the birth of Apis, and fecundity.

"Immediately (ſays Ælian) they built a temple to the new god, facing the riſing ſun, according to the precepts of Mercury, where they nouriſhed him with milk for four months. This term expired, the prieſts repaired in pomp to his habitation, and ſaluted him by the name of Apis. They then placed him in a veſſel magnificently decorated, covered with rich tapeſtry, and reſplendent with gold, and conducted him to Nilopolis, ſinging hymns, and burning perfumes. There they kept him for forty days. During this ſpace of time, women alone had permiſſion to ſee him, and ſaluted him in a particular manner. After the inauguration of the god, in this city, he was conveyed to Memphis with the ſame retinue, followed by an innumerable quantity of boats, ſumptuouſly decked out. There they completed the ceremonies of his inauguration, and he became ſacred to all the world. Apis was ſuperbly lodged, and the place where he lay was myſtically called *the bed*. Strabo having viſited his palace, thus deſcribes it: "The edifice where Apis is kept, is ſituated near the temple of Vulcan. He is fed in a ſacred apartment, before which is a large court. The houſe in which they keep the cow that produced him, occupies one of its ſides. Sometimes, to ſatisfy the curioſity of ſtrangers, they make him go out into this court. One may ſee him at all times through a window; but the prieſts produce him alſo to public view." Once a year (ſays Solinus) they preſent a heifer to him, and the ſame day they kill her.

A bull, born in ſo marvellous a manner, muſt be poſſeſſed of ſupernatural knowledge. Accordingly the prieſts publiſhed, that he predicted future events by geſtures, by motions, and other ways, which they conſtrued according to their fancy. "Apis (ſays Pliny) has two temples called *Beds*, which ſerved as an augury for the people. When they come to conſult him, if he enters into a particular one, it is a favourable preſage, and fatal if he paſſes into the other. He gives anſwers to individuals by taking food from their hands. He refuſed that offered him by Germanicus, who died ſoon after." It would be unjuſt to conclude, that this reſpectable writer gave credit to ſuch auguries. He relates the opinion of the Egyptians, and contents himſelf with citing facts without offering his judgement. Ap

Such was the inſtallation of Apis. His anniverſary was always celebrated for ſeven days. The people aſſembled to offer ſacrifices to him, and what is extraordinary, oxen were immolated on the occaſion. This ſolemnity did not paſs without prodigies. Ammianus Marcellinus, who has collected the teſtimonies of the ancients, relates them in theſe words: "During the ſeven days in which the prieſts of Memphis celebrate the birth of Apis, the crocodiles forget their natural ferocity, become gentle, and do no harm to anybody."

This bull, however, ſo honoured, muſt not exceed a myſterious term fixed for his life. "Apis (ſays Pliny) cannot live beyond a certain number of years. When he has attained that period they drown him in the fountain of the prieſts; for it is not permitted, adds Ammianus Marcellinus, to let him prolong his life beyond the period preſcribed for him by the ſacred books." When this event happened, he was embalmed, and privately let down into the ſubterraneous places deſtined for that purpoſe. In this circumſtance, the prieſts announced that Apis had diſappeared; but when he died a natural death, before this period arrived, they proclaimed his death, and ſolemnly conveyed his body to the temple of Serapis.

"At Memphis was an ancient temple of Serapis which ſtrangers were forbidden to approach, and where the prieſts themſelves only entered when Apis was interred. It was then (ſays Plutarch) that they opened the gates called *Lethe* and *Cocythe* (of oblivion and lamentation), which made a harſh and piercing ſound."

Ammianus Marcellinus, and Solinus, paint with great energy the general deſpair of the Egyptians, who with cries and lamentations demanded another Apis from heaven.

According to Plutarch, the term preſcribed for the life of Apis was 25 years; which number marked a period of the ſun and of the moon, and the bull was conſecrated to theſe two bodies. Syncellius, in his Chronography, when he comes down to the 32d Pharaoh, called *Aſeth*, ſays, "before Aſeth, the ſolar year conſiſted of 360 days. This prince added five to complete its courſe. In his reign a calf was placed amongſt the gods, and named *Apis*." And in the Bibliotheca of Fabricius we have the following paſſage: "It was cuſtomary to inaugurate the kings of Egypt at Memphis, in the temple of Apis. They were here firſt initiated in the myſteries, and were religiouſly inveſted; after which they were permitted to bear the yoke of the god, through a town to a place called the *Sanctuary*, the entrance of which was prohibited to the profane. There they were obliged to ſwear that they would neither inſert months nor days in the year, and that it ſhould remain compoſed of 365 days, as had been eſtabliſhed by the ancients." From theſe facts, Mr Savary, in his letters on Egypt, infers, that Apis was the tutelar divinity of the new form given to the ſolar year, and of the cycle of 25 years, diſcovered at the

ſame

Apis
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Apocalypſe.

ſame time. This deity, beſides, had a marked relation to the ſwelling of the Nile, as is teſtified by a great number of hiſtorians. The new moon which followed the ſummer ſolſtice, was the era of this phenomenon, on which the eyes of every body were fixed: And Pliny ſpeaks as follows on this ſubject: "Apis had on his right ſide a white mark, repreſenting the creſcent: This mark (continues Ælian) indicated the commencement of the inundation." If Apis poſſeſſed the characteriſtic ſigns which proved his divine origin, he promiſed fertility and abundance of the fruits of the earth. It ſeems demonſtrated, therefore, Mr Savary adds, that this ſacred bull, the guardian of the ſolar year of 365 days, was alſo regarded as the genius who preſided over the overflowing of the river. The prieſts by fixing the courſe of his life to 25 years, and by making the inſtallation of a new Apis concur with the renewal of the period above mentioned, had probably perceived, as the reſult of long meteorological obſervations, that this revolution always brought about abundant ſeaſons. Nothing was better calculated to procure a favourable reception of this emblematical deity from the people, ſince his birth was a preſage to them of a happy inundation, and of all the treaſures of teeming nature.

The ſolemnity of his inauguration was called *Apparition*. That which was renewed every year towards the 12th or 13th of the month *Payn*, which correſponds with the 17th or 18th of June, was called *the birth of Apis*. It was a time of rejoicing, which Ælian deſcribes in the following manner: "What feſtivals! what ſacrifices take place in Egypt at the commencement of the inundation! It is then that all the people celebrate the birth of Apis. It would be tedious to deſcribe the dances, the rejoicings, the ſhows, the banquets, to which the Egyptians abandon themſelves on this occaſion, and impoſſible to expreſs the intoxication of joy which breaks forth in all the towns of the kingdom."

Theſe obſervations Mr Savary thinks further confirmed by the name of this reſpectable bull; *Apis*, in the Egyptian tongue, ſignifying number, meaſure. This epithet perfectly characterizes an animal eſtabliſhed as the guardian of the ſolar year, the type of the cycle of 25 years, and the preſage of a favourable inundation.

Monſieur Huet, biſhop of Avranches, has endeavoured to prove that Apis was a ſymbolical image of the patriarch Joſeph, and has ſupported his opinion with all his erudition. Dr Bryant apprehends that the name of *Apis* was an Egyptian term for a father; that it referred to the patriarch Noah; and that the creſcent which was uſually marked on the ſide of the animal, was a repreſentation of the ark.

APIS, or *Bee*. See ENTOMOLOGY *Index* and BEE.

APIUM PARSLEY. See BOTANY *Index*.

APIVOROUS, in *Ornithology*, a ſynonyme of a ſpecies of falco. See FALCO ORNITHOLOGY *Index*.

APLUDA. See BOTANY *Index*.

APOBATANA, the metropolis of Media, and where the kings kept their treaſure (Iſidorus Characenus); ſuppoſed to be the ſame with *Ecbatana*.

APOBATERION, in antiquity, a valedictory ſpeech or poem made by a perſon on departing out of his own country, and addreſſed to his friends or relations. Apobathra, Apocalypſe.

APOBATHRA, a place near Seſtos (Strabo); the landing place where Xerxes's ſhips were frozen and ſtuck in the ice (Euſtathius).

APOCALYPSE, REVELATION, the name of one of the ſacred books of the New Teſtament, containing revelations concerning ſeveral important doctrines of Chriſtianity. The word is Greek, and derived from *αποκαλυπτω*, to *reveal* or *diſcover*.

This book, according to Irenæus, was written about the year 96 of Chriſt, in the iſland of Patmos, whither St John had been baniſhed by the emperor Domitian. But Sir Iſaac Newton places the writing of it earlier, viz. in the time of Nero. Some attribute this book to the arch heretic Cerinthus: but the ancients unanimouſly aſcribed it to John, the ſon of Zebedee, and brother of James; whom the Greek fathers called the *Divine*, by way of eminence, to diſtinguiſh him from the other evangeliſts. This book has not, at all times, been eſteemed canonical. There were many churches in Greece, as St Jerome informs us, which did not receive it; neither is it in the catalogue of canonical books prepared by the council of Laodicea, nor in that of St Cyril of Jeruſalem: but Juſtin, Irenæus, Origen, Cyprian, Clemens of Alexandria, Tertullian, and all the fathers of the fourth, fifth, and the following centuries, quote the Revelation as a book then acknowledged to be canonical. The Alogians, Marcionites, Cerdonians, and Luther himſelf, rejected this book: but the Proteſtants have forſaken Luther in this particular; and Beza has ſtrongly maintained againſt his objections, that the Apocalypſe is authentic and canonical.

The Apocalypſe conſiſts of twenty-two chapters. The three firſt are an inſtruction to the biſhops of the ſeven churches of Aſia Minor. The fifteen following chapters contain the perſecutions which the church was to ſuffer from the Jews, heretics, and Roman emperors. Next St John propheſies of the vengeance of God, which he will exerciſe againſt thoſe perſecutors, againſt the Roman empire, and the city of Rome; which, as the Proteſtants ſuppoſe, he deſcribes under the name of Babylon the great whore, ſeated upon ſeven hills. In the laſt place, the 19th, 20th, 21ſt, and 22d chapters, deſcribe the triumph of the church over its enemies, the marriage of the Lamb, and the happineſs of the church triumphant.

"It is a part of this prophecy (ſays Sir Iſaac Newton), that it ſhould not be underſtood before the laſt age of the world; and therefore it makes for the credit of the prophecy, that it is not yet underſtood. The folly of interpreters has been to foretel times and things by this prophecy, as if God deſigned to make them prophets. By this raſhneſs they have not only expoſed themſelves, but brought the prophecy alſo into contempt. The deſign of God was much otherwiſe: He gave this and the prophecies of the Old Teſtament, not to gratify men's curioſities, by enabling them to foreknow things; but that, after they were fulfilled, they might be interpreted by the events; and his own providence, not the interpreters, be then manifeſted thereby to the world. And there is already ſo much of the prophecy fulfilled, that as many as will take pains

Apocope ‖ Apocrypha.

pains in this ſtudy, may ſee ſufficient inſtances of God's providence.

There have been ſeveral other works publiſhed under the title of *Apocalypſes*. Sozomen mentions a book uſed in the churches of Paleſtine, called the *Apocalypſe* or *Revelation of St Peter*. He alſo mentions an Apocalypſe of St Paul: which the Cophtæ retain to this day. Euſebius alſo ſpeaks of both theſe Apocalypſes. St Epiphanius mentions an Apocalypſe of Adam; Nicephorus, an Apocalypſe of Eſdras: Gratian and Cedrenus, an Apocalypſe of Moſes, another of St Thomas, and another of St Stephen; St Jerome, an Apocalypſe of Elias. Porphyry, in his life of Plotin, makes mention of the Apocalypſe or Revelations of Zoroaſter, Zoſtrian, Nicothæus, Allogenes, &c.

APOCOPE, among grammarians, a figure which cuts off a letter or ſyllable from the end of a word; as *ingeni* for *ingenii*.

APOCRISARIUS, in eccleſiaſtical antiquity, a ſort of reſident in an imperial city, in the name of a foreign church or biſhop, whoſe office was to negotiate, as proctor at the emperor's court, in all eccleſiaſtical cauſes in which his principals might be concerned. The inſtitution of the office ſeems to have been in the time of Conſtantine, or not long after, when, the emperors being become Chriſtians, foreign churches had more occaſions to promote their ſuits at court than formerly. However, we find it eſtabliſhed by law in the time of Juſtinian. In imitation of this officer, almoſt every monaſtery had its Apocriſarius, or reſident, in the imperial city.

The title and quality of Apocriſary became at length appropriated to the pope's agent, or *nuncio*, as he is now called; who reſided at Conſtantinople, to receive the pope's deſpatches, and the emperor's anſwers. The word is formed from *αποκρινω to anſwer*.

APOCRUSTICS, in *Medicine*, the ſame with repellents.

APOCRYPHA, or APOCRYPHAL BOOKS, ſuch books as are not admitted into the canon of Scripture, being either not acknowledged as divine, or conſidered as ſpurious. The word is Greek; and derived from *απο*, and *κρυπτω* to *hide* or *conceal*.

When the Jews publiſhed their ſacred books, they gave the appellations of *canonical* and *divine* only to ſuch as they then made public: ſuch as were ſtill retained in their archives they called *apocryphal*, for no other reaſon but becauſe they were not public; ſo that they might be really ſacred and divine, though not promulged as ſuch.

Thus, in reſpect of the Bible, all books were called *apocryphal* which were not inſerted in the Jewiſh canon of Scripture. Voſſius obſerves, that, with regard to the ſacred books, none are to be accounted apocryphal, except ſuch as had neither been admitted into the ſynagogue nor the church, ſo as to be added to the canon, and read in public.

The Proteſtants do not only reckon thoſe books to be apocryphal which are eſteemed ſuch in the church of Rome, as the prayer of Manaſſeh king of Judah, the third and fourth books of Eſdras, St Barnabas's epiſtle, the book of Hermos, the addition at the end of Job, and the 151ſt pſalm; but alſo Tobit, Judith, Eſther, the book of Wiſdom, Jeſus the ſon of Sirach, Baruch the prophet, the Song of the Three Children, the Hiſtory of Suſannah, the Hiſtory of Bel and the Dragon, and the firſt and ſecond books of the Maccabees.

It is now pretended that theſe books were not received by the Jews, or ſo much as known to them. None of the writers of the New Teſtament cite or mention them: neither Philo nor Joſephus ſpeak of them. The Chriſtian church was for ſome ages an utter ſtranger to theſe books. Origen, Athanaſius, Hillary, Cyril of Jeruſalem, and all the orthodox writers, who have given catalogues of the canonical books of Scripture, unanimouſly concur in rejecting theſe out of the canon. And for the New Teſtament, they are divided in their opinions, whether the epiſtle to the Hebrews, the epiſtle of St James, and the ſecond epiſtle of St Peter, the ſecond and third epiſtles of St John, the epiſtle of St Jude, and the Revelation, are to be acknowledged as canonical or not.

The Proteſtants acknowledge ſuch books of Scripture only to be canonical as were ſo eſteemed to be in the firſt ages of the church; ſuch as are cited by the earlieſt writers among the Chriſtians as of divine authority, and after the moſt diligent inquiry were received and ſo judged to be by the council of Laodicea. The ſeveral epiſtles above mentioned, and the book of Revelation, whatever the ſentiments of ſome particular perſons are or may have been of them, are allowed by all the reformed churches to be parts of the canon of the New Teſtament.

The apocryphal books, however, according to the ſixth article of the church of England, are to be read for example of life and inſtruction of manners; but it doth not apply them to eſtabliſh any doctrine.

APOCYNUM. See DOGS BANE, BOTANY *Index*.

APODECTÆ, in antiquity, a denomination given to ten general receivers appointed by the Athenians to receive the public revenues, taxes, debts, and the like. The apodectæ had alſo a power to decide controverſies ariſing in relation to money and taxes, all but thoſe of the moſt difficult nature and higheſt concern, which were reſerved to the courts of judicature.

APODECTÆI, in the Athenian government, officers appointed to ſee that the meaſures of corn were juſt.

APODES, in a general ſenſe, denotes things without feet. Zoologiſts apply the name to a fabulous ſort of birds, ſaid to be found in ſome of the iſlands of the new world, which, being entirely without feet, ſupported themſelves on the branches of trees by their crooked bills.

APODES, in the Linnæan ſyſtem, the name of the *firſt order* of fiſhes, or thoſe which have no belly fins. See ICHTHYOLOGY *Index*.

APODICTICAL, among philoſophers, a term importing a demonſtrative proof, or ſyſtematical method of teaching.

APODOSIS, in *Rhetoric*, makes the third part of a complete exordium, being properly the application or reſtriction of the *protaſis*. The apodoſis is the ſame with what is otherwiſe called *axioſis*; and ſtands oppoſed to *protaſis*: e. g. *protaſis*, all branches of hiſtory are neceſſary for a ſtudent; *cateſcene*, ſo that, without theſe, he can never make any conſiderable pro-

gress,

Apodyterium || Apollinarians.

gure; *apodoſis*, but literally hiſtory is of a more eſpecial uſe, which recommends it, &c.

APODYTERIUM, in the ancient baths, the apartments where perſons dreſſed and undreſſed.

APOGEE, in *Aſtronomy*, that point in the orbit of a planet which is at the greateſt diſtance from the earth. The apogee of the ſun is that part of the earth's orbit which is at the greateſt diſtance from the ſun; and conſequently the ſun's apogee, and the earth's aphelion, are one and the ſame point.

APOLIDES, in antiquity, thoſe condemned for life to the public works, or exiled into ſome iſland, and thus diveſted of the privileges of Roman citizens.

APOLLINARIAN GAMES, in Roman antiquity, were inſtituted in the year of Rome 542. The occaſion was a kind of oracle delivered by the prophet Marcus after the fatal battle at Cannæ, declaring that to expel the enemy, and cure the people of an infectious diſeaſe which then prevailed, ſacred games were to be annually performed in honour of Apollo; the prætor to have the direction of them, and the decemviri to offer ſacrifices after the Grecian rite. The ſenate ordered that this oracle ſhould be obſerved the rather, becauſe another of the ſame Marcus, wherein he had foretold the overthrow at Cannæ, had come true; for this reaſon they gave the prætor 12,000 aſes out of the public caſh to defray the ſolemnity. There were ſacrificed an ox to Apollo, as alſo two white goats. and a cow to Latona; all with their horns gilt. Apollo had alſo a collection made for him, beſides what the people who were ſpectators gave voluntarily. The firſt prætor by whom they were held was P. Cornelius Sylla. For ſome time they were moveable or indictive; but at length were fixed, under P. Licinius Varus, to the fifth of July, and made perpetual. The men, who were ſpectators at theſe games, wore garlands on their heads; the women performed their devotions in the temples at the ſame time, and at laſt they carouſed together in the veſtibules of their houſes, the doors ſtanding open. The Apollinarian games were merely ſcenical; and at firſt only obſerved with ſinging, piping, and other ſorts of muſic; but afterwards there were alſo introduced all manner of mountebank tricks, dances, and the like: yet ſo as that they ſtill remained ſcenical, no chariot races, wreſtling, or the like laborious exerciſes of the body, being ever practiſed at them.

APOLLINARIANS, APOLLINARISTS, called alſo by Epiphanius *Dimaritæ*, ancient heretics, who denied the proper humanity of Chriſt, and maintained that the body which he aſſumed was endowed with a ſenſitive, and not a rational, ſoul, but that the Divine Nature ſupplied the place of the intellectual principle in man. This ſect derived its name from Apollinaris, biſhop of Laodicea, in the fourth century.

The Apollinarians have been charged with other opinions, ſuch as, the Millenarian and Sabellian, the pre-exiſtence of the body of Chriſt, and the paſſion of his Deity; but eccleſiaſtical writers are not agreed with reſpect to theſe and other particulars. Their doctrine was firſt condemned by a council of Alexandria in the year 362, and afterwards in a more formal manner by a council at Rome in 375; and by another council in 378, which depoſed Apollinaris from his biſhopric. Notwithſtanding all, his doctrine ſpread through moſt of the churches of the eaſt: and his followers were ſubdivided into various ſects. In 388, the emperor Theodoſius enacted a law, forbidding them to hold aſſemblies, to have any eccleſiaſtics or biſhops, or to dwell in cities. The rigorous execution of this law, in concurrence with the decrees of different councils, reduced them to a very ſmall number, and their doctrine had no long duration. Apollinaris.

APOLLINARIS, CAIUS SULPICIUS, a very learned grammarian, born at Carthage, lived in the 2d century, under the Antonines; he is ſuppoſed to be the author of the verſes which are prefixed to the comedies of Terence, and contain the arguments of them. He had for his ſucceſſor in the profeſſion of grammar Helvius Pertinax, who had been his ſcholar, and was at laſt emperor.

APOLLINARIS SIDONIUS, *Caius Lollius*, an eminent Chriſtian writer and biſhop in the 5th century, was born of a noble family in France. He was educated under the beſt maſters, and made a prodigious progreſs in the ſeveral arts and ſciences, but particularly in poetry and polite literature. After he had left the ſchools, he applied himſelf to the profeſſion of war. He married Papianilla, the daughter of Avitus, who was conſul, and afterwards emperor, by whom he had three children. But Majorianus in the year 457 having deprived Avitus of the empire, and taken the city of Lyons, in which our author reſided, Apollinaris fell into the hands of the enemy. However the reputation of his learning ſoftened Majorianus's reſentment, ſo that he treated him with the utmoſt civility, in return for which Apollinaris compoſed a panegyric in his honour; which was ſo highly applauded, that he had a ſtatue erected to him at Rome, and was honoured with the title of *Count*. In the year 467 the emperor Anthemius rewarded him for the panegyric which he had written in honour of him, by raiſing him to the poſt of governor of Rome, and afterwards to the dignity of a patrician and ſenator, and erecting a ſtatue to him. But he ſoon quitted theſe ſecular employments for the ſervice of the church. The biſhopric of Clermont being vacant in 472 by the death of Eparchus, Apollinaris, who was then only a layman, was choſen to ſucceed him without any intereſt or ſolicitation on his part, in which ſee he acted with the greateſt integrity. Clermont being beſieged by the Goths, he animated the people to the defence of that city, and would never conſent to the ſurrender of it; ſo that, when it was taken about the year 480, he was obliged to retire; but he was ſoon reſtored by Evariges king of the Goths, and continued to govern the church as he had done before. He died in peace the 21ſt of Auguſt 487; and his feſtival is ſtill obſerved in the church of Clermont, where his memory is held in great veneration. He is eſteemed the moſt elegant writer of his age, both in proſe and verſe. He wrote a great many little pieces; but preſerved none but thoſe which he thought were worthy of being continued down to poſterity. He collected himſelf the nine books which we have remaining of his letters. His chief pieces in poetry are the three panegyrics upon the emperors Avitus, Majorianus, and Anthemius. The reſt of them are a collection of poems addreſſed to his friends upon particular ſubjects. His letters contain a variety of particulars relating to polite literature and profane hiſtory.

APOLLINARIUS,

Apollinarius Apollo.

APOLLINARIUS, Claudius, a learned biſhop of Hierapolis, who, about the year 170, preſented to Marcus Aurelius an excellent Apology for the Chriſtians.

Apollinarius *the Younger*, thus called to diſtinguiſh him from his father, called *Apollinarius the Elder*, was at firſt lector or reader of Laodicea, and afterwards biſhop of that city. He was univerſally eſteemed the greateſt man of his age, both for learning and piety, and a moſt accurate and nervous defender of the faith againſt all its enemies: but notwithſtanding this, on his advancing ſome opinions that were not approved, he was anathematized as an heretic by the ſecond general council of Conſtantinople in 381.

APOLLO, in *Mythology*, a Pagan deity worſhipped by the Greeks and Romans. Cicero mentions four of this name: the moſt ancient of whom was the ſon of Vulcan; the ſecond a ſon of Corybas, and born in Crete; the third an Arcadian, called *Nomian*, from his being a great legiſlator; and the laſt, to whom the greateſt honour is aſcribed, the ſon of Jupiter and Latona.

Apollo had a variety of other names, either derived from his principal attributes, or the chief places where he was worſhipped. He was called the *Healer*, from his enlivening warmth and cheering influence; *Pæan*, from the peſtilential heats: to ſignify the former, the ancients placed the Graces on his right hand; and for the latter, a bow and arrows in his left: *Nomius*, or the ſhepherd, from his fertilizing the earth, and thence ſuſtaining the animal creation: *Delius*, from his rendering all things manifeſt: *Pythius*, from his victory over Python; *Lycius*, *Phœbus*, and *Phanæa*, from his purity and ſplendour. As Apollo is almoſt always confounded by the Greeks with the ſun, it is no wonder that he ſhould be dignified with ſo many attributes. It was natural for the moſt glorious object in nature, whoſe influence is felt by all creation, and ſeen by every animated part of it, to be adored as the fountain of light, heat, and life. The power of healing diſeaſes being chiefly given by the ancients to medicinal plants and vegetable productions, it was natural to exalt into a divinity the viſible cauſe of their growth. Hence he was alſo ſtyled the *God of Phyſic*; and that external heat which cheers and invigorates all nature, being transferred from the human body to the mind, gave riſe to the idea of all mental effervеſcence coming from this god; hence, likewiſe, poets, prophets, and muſicians, are ſaid to be *Numine afflati*, inſpired by Apollo.

Whether Apollo was ever a real perſonage, or only the great luminary, many have doubted. Indeed, Voſſius has taken great pains to prove this god to be only a metaphorical being, and that there never was any other Apollo than the ſun. "He was ſtyled the *Son of Jupiter* (ſays this author), becauſe that god was reckoned by the ancients the author of the world. His mother was called *Latona*, a name which ſignifies *hidden*; becauſe, before the ſun was created, all things were wrapped up in the obſcurity of chaos. He is always repreſented as beardleſs and youthful, becauſe the ſun never grows old or decays. And what elſe can his bow and arrows imply, but his piercing beams?" And he adds, "that all the ceremonies which were performed to his honour, had a manifeſt relation to the great ſource of light which he repreſented. Whence (he concludes) it is in vain to ſeek for any other divinity than the ſun, which was adored under the name of Apollo." However, though this be in general true, yet it does appear, from many paſſages in ancient authors, that there was ſome illuſtrious patronage named *Apollo*, who, after his apotheoſis, was taken for the ſun; as Oſiris and Orus in Egypt, whoſe exiſtence cannot be called in queſtion, were, after their death, confounded with the ſun, of which they became the ſymbols, either from the glory and ſplendour of their reigns, or from a belief that their ſouls had taken up their reſidence in that luminary. Apollo.

Of the four Apollos mentioned by Cicero, it appears that the three laſt were Greeks, and the firſt an Egyptian; who, according to Herodotus, was the ſon of Oſiris and Iſis, and called *Orus*. Pauſanias is of the ſame opinion as Herodotus, and ranks Apollo among the Egyptian divinities. The teſtimony of Diodorus Siculus is ſtill more expreſs; for in ſpeaking of Iſis, after ſaying that ſhe had invented the practice of medicine, he adds, that ſhe taught this art to her ſon Orus, named *Apollo*, who was the laſt of the gods that reigned in Egypt.

It is eaſy to trace almoſt all the Grecian fables and mythologies from Egypt. If the Apollo of the Greeks was ſaid to be the ſon of Jupiter, it was becauſe Orus the Apollo of the Egyptians had Oſiris for his father, whom the Greeks confounded with Jupiter. If the Greek Apollo was reckoned the god of eloquence, muſic, medicine, and poetry, the reaſon was, that Oſiris, who was the ſymbol of the ſun among the Egyptians, as well as his ſon Orus, had there taught thoſe liberal arts. If the Greek Apollo was the god and conductor of the Muſes, it was becauſe Oſiris carried with him in his expedition to the Indies ſinging women and muſicians. This parallel might be carried on ſtill further; but enough has been ſaid to prove that the true Apollo was that of Egypt.

To the other perfections of this divinity the poets have added beauty, grace, and the art of captivating the ear and the heart. no leſs by the ſweetneſs of his eloquence, than by the melodious ſounds of his lyre. However, with all theſe accompliſhments, he had not the talent of captivating the fair with whoſe charms he was enamoured. But the amours and other adventures related of this god during his reſidence on earth, are too numerous, and too well known, to be inſerted here. His muſical conteſts, however, being more connected with the nature of this work, muſt not be wholly unnoticed.

To begin, therefore, with the diſpute which he had with Pan, that was left to the arbitration of Midas.

Pan, who thought he excelled in playing the flute, offered to prove that it was an inſtrument ſuperior to the lyre of Apollo. The challenge was accepted; and Midas, who was appointed the umpire in this conteſt, deciding in favour of Pan, was rewarded by Apollo, according to the poets, with the ears of an aſs for his ſtupidity.—This fiction ſeems founded upon hiſtory. Midas, according to Pauſanias, was the ſon of Gordius and Cybele; and reigned in the Greater Phrygia, as we learn from Strabo. He was poſſeſſed of ſuch great riches, and ſuch an inordinate deſire of increaſing them by the moſt contemptible parſimony, that,

Apollo. that, according to the poets, he converted whatever he touched into gold. However, his talent for accumulation did not extend to the acquirement of taſte and knowledge in the fine arts; and, perhaps, his dulneſs and inattention to theſe provoked ſome muſical poets to invent the fable of his deciſion in favour of Pan againſt Apollo. The ſcholiaſt upon Ariſtophanes, to explain the fiction of his long ears, ſays, that it was deſigned to intimate that he kept ſpies in all parts of his dominions.

Marſyas, another player on the flute, was ſtill more unfortunate than either Pan or his admirer Midas. This Marſyas, having engaged in a muſical diſpute with Apollo, choſe the people of Niſa for judges. Apollo played at firſt a ſimple air upon his inſtrument; but Marſyas, taking up his pipe, ſtruck the audience ſo much by the novelty of its tone, and the art of his performance, that he ſeemed to be heard with more pleaſure than his rival. Having agreed upon a ſecond trial of ſkill, it is ſaid that the performance of Apollo, by accompanying the lyre with his voice, was allowed greatly to excel that of Marſyas upon the flute alone. Marſyas, with indignation, proteſted againſt the deciſion of his judges; urging that he had not been fairly vanquiſhed according to the rules ſtipulated, becauſe the diſpute was concerning the excellence of their ſeveral inſtruments, not their voices; and that it was wholly unjuſt to employ two arts againſt one.

Apollo denied that he had taken any unfair advantages of his antagoniſt, ſince Marſyas had employed both his mouth and fingers in performing upon his inſtrument; ſo that, if he was denied the uſe of his mouth, he would be ſtill more diſqualified for the contention. The judges approved of Apollo's reaſoning, and ordered a third trial. Marſyas was again vanquiſhed; and Apollo, inflamed by the violence of the diſpute, flayed him alive for his preſumption. See Marsyas.

Pauſanias relates a circumſtance concerning this conteſt, that had been omitted by Diodorus, which is, that Apollo accepted the challenge from Marſyas, upon condition that the victor ſhould uſe the vanquiſhed as he pleaſed.

Diodorus informs us, that Apollo ſoon repenting of the cruelty with which he had treated Marſyas, broke the ſtrings of the lyre, and by that means put a ſtop, for a time, to any farther progreſs in the practice of that new inſtrument.

The next incident to be mentioned in the hiſtory of Apollo is his defeat of the ſerpent Python.

The waters of Deucalion's deluge, ſays Ovid, which had overflowed the earth, left a ſlime from whence ſprung innumerable monſters; and among others the ſerpent Python, which made great havock in the country about Parnaſſus. Apollo, armed with his darts, put him to death; which phyſically explained, implies, that the heat of the ſun having diſſipated the noxious ſteams, theſe monſters ſoon diſappeared: or if this fable be referred to hiſtory, the ſerpent was a robber, who haunting the country about Delphos, and very much infeſting thoſe who came thither to ſacrifice; a prince, who bore the name of Apollo, or one of the prieſts of that god, put him to death.

This event gave riſe to the inſtitution of the Pythian games, ſo frequently mentioned in the Grecian hiſtory; and it was from the legend of Apollo's victory Apollo. over the Python that the god himſelf acquired the name of *Pythius*, and his prieſteſs that of Pythia. The city of Delphos, where the famous oracles were ſo long delivered, was frequently ſtyled *Pytho*.

As Apollo was the god of the fine arts, thoſe who cultivated them were called *his ſons*. Of this number was Philammon of Delphos, whom the poets and mythologiſts make the twin-brother of Autolychus, by the nymph Chione, and Apollo and Mercury. It is pretended that both theſe divinities were favoured by the nymph on the ſame day, and that their ſires were known from their different talents. Philammon, a great poet and muſician, was reported to be the offſpring of the god who preſides over thoſe arts; and Autolychus, from the craftineſs and ſubtility of his diſpoſition, was ſaid to have ſprung from Mercury, god of theft and fraud. Philammon is one of the firſt, after Apollo, upon fabulous record, as a vocal performer, who accompanied himſelf with the ſound of the lyre: his ſon was the celebrated Thamyris. See Thamyris.

There can be no doubt but that Apollo was more generally revered in the Pagan world than any other deity; having, in almoſt every region of it, temples, oracles, and feſtivals, as innumerable as his attributes: the wolf and hawk were conſecrated to him, as ſymbols of his piercing eyes; the crow and the raven, becauſe theſe birds were ſuppoſed to have by inſtinct the faculty of prediction; the laurel, from a perſuaſion that thoſe who ſlept with ſome branches of that tree under their heads received certain vapours, which enabled them to prophecy. The cock was conſecrated to him, becauſe by his crowing he announces the riſing of the ſun; and the graſhopper on account of his ſinging faculty, which was ſuppoſed to do honour to the god of muſic. Moſt of the ancient poets have celebrated this tuneful inſect, but none better than Anacreon, Ode xliii.

Plato ſays that the graſhopper ſings all ſummer without food, like thoſe men who, dedicating themſelves to the Muſes, forget the common concerns of life.

The ſwan was regarded by the ancients as a bird ſacred to Apollo in two capacities; firſt, as being, like the crow and raven, gifted with the ſpirit of prediction; and, ſecondly, for his extraordinary vocal powers. The ſweetneſs of his ſong, eſpecially at the approach of death, was not only extolled by all the poets of antiquity, but by hiſtorians, philoſophers, and ſages; and to call a great writer the *ſwan* of his age and nation, was a full acknowledgment of his ſovereignty. Thus Horace calls Pindar *the Theban ſwan*.

Plutarch, who was himſelf a prieſt of Apollo, impreſſed with the higheſt reſpect and veneration for him and for muſic, in his dialogue upon that art, makes one of his interlocutors ſay, that an invention ſo uſeful and charming could never have been the work of man, but muſt have originated from ſome god, ſuch as Apollo, the inventor of the flute and lyre, improperly attributed to Hyagnis, Marſyas, Olympus, and others; and the proofs he urges in ſupport of this aſſertion, ſhow, if not its truth, at leaſt that it was the common and received opinion.

All dances and ſacrifices, ſays he, uſed in honour of Apollo,

Apollo. Apollo, are performed to the ſound of flutes: the ſtatue of this god at Delos, erected in the time of Hercules, had in its right hand a bow; and on the left stood the three Graces, who were furniſhed with three kinds of inſtruments, the lyre, the flute, and the ſyrinx. The youth alſo who carries the laurel of Tempe to Delphos, is accompanied by one playing on the flute; and the ſacred preſents formerly ſent to Delos by the Hyperboreans, were conducted thither to the ſound of lyres, flutes, and ſhepherds pipes. He ſupports theſe facts by the teſtimonies of the poets Alcæus, Alcman, and Corinna.

It ſeems as if the account of Apollo could not be concluded by any thing that is left to offer on the ſubject, ſo properly, as by part of the celebrated hymn of Callimachus, which during many ages was performed and heard by the moſt poliſhed people on the globe with the utmoſt religious zeal, at the feſtivals inſtituted to this god.

Ha! how the laurel, great Apollo's tree,
And all the cavern, ſhakes! Far off, far off,
The man that is unhallow'd: for the god
Approaches. Hark! he knocks; the gates
Feel the glad impulſe, and the ſever'd bars
Submiſſive clink againſt their brazen portals.
Why do the Delian palms incline their boughs,
Self-mov'd; and hovering ſwans, their throats releas'd
From native ſilence, carol ſounds harmonious?

Begin, young men, the hymn: let all your harps
Break their inglorious ſilence; and the dance,
In myſtic numbers trod, explain the muſic.
But firſt, by ardent pray'r and clear luſtration,
Purge the contagious ſpots of human weakneſs:
Impure, no mortal can behold Apollo.
So may you flouriſh, favour'd by the god,
In youth with happy nuptials, and in age
With ſilver hairs, and fair deſcent of children;
So lay foundations for aſpiring cities,
And bleſs your ſpreading colonies increaſe.

Pay ſacred rev'rence to Apollo's ſong;
Leſt wrathful the far-ſhooting god emit
His fatal arrows. Silent nature ſtands:
And ſeas ſubſide, obedient to the ſound
Of Io! Io Pæan! nor dares Thetis
Longer bewail her lov'd Achilles' death.
For Phœbus was his foe. Nor muſt ſad Niobe
In fruitleſs ſorrow perſevere, or weep,
Ev'n thro' the Phrygian marble. Hapleſs mother!
Whoſe fondneſs could compare her mortal offspring
To thoſe which fair Latona bore to Jove.
Io! again repeat ye, Io Pæan!

Recite Apollo's praiſe till night draws on,
The ditty ſtill unfiniſh'd; and the day
Unequal to the godhead's attributes
Various, and matter copious of your ſongs.

Sublime at Jove's right hand Apollo ſits,
And thence diſtributes honour, gracious king,
And theme of verſe perpetual. From his robe
Flows light ineffable! his harp, his quiver,
And Lactian bow, are gold: with golden ſandals
His feet are ſhod. How rich! how beautiful!
Beneath his ſteps the yellow min'ral riſes;
And earth reveals her treaſures. Youth and beauty
Eternal deck his cheek: from his fair head
Perfumes diſtill their ſweets; and cheerful health,
His duteous handmaid, through the air improv'd
With lavish hand ſcatters its gifts ambrosial.
The ſpearman's arm by thee, great god, directed,
Sends forth a certain wound. The bard divine,
Inſpir'd by thee, compoſes verſe immortal.
Taught by thy art divine, the sage phyſician
Eludes the urn, and chains or exiles death.

Perpetual fires ſhine hallow'd on thy altars,
When annual the Cynthian feaſt is held;
The warlike Libyans, clad in armour, lead
The dance; with clanging ſwords and ſhields they beat
The dreadful meaſure: In the chorus join
Their women; brown, but beautiful: ſuch rites
To thee well pleaſing——————
——————The monſtrous Python
Durſt tempt thy wrath in vain; for dead he fell,
To thy great ſtrength and golden arms unequal.
Io! while thy unerring hand elanc'd
Another and another dart, the people
Joyfully repeated *Io! Io Pæan!*
Elance the dart, Apollo; for the ſafety
And health of man, gracious thy mother bore thee!

Prior.

Apollo Belvidere, ranked the firſt in the firſt claſs of ancient ſtatues, and ſo called from having been placed in the Belvidere of the Vatican at Rome by Pope Julius II. where it remained for 300 years, and till Rome was taken and plundered by the French in 1797. This celebrated ſtatue was found in the ruins of ancient Antium about the end of the 15th century. The artiſt is unknown. The excellence of this ſtatue, which has attracted univerſal admiration, conſiſts in the elegance and ſublimity of the expreſſion. Beſide this, there are many ancient ſtatues referred to the firſt which are diſtinguiſhed by peculiar beauties.

APOLLODORUS, a famous architect under Trajan and Hadrian, was born at Damaſcus. He had the direction of the bridge of ſtone which Trajan ordered to be built over the Danube in the year 104, which was eſteemed the moſt magnificent of all the works of that emperor. Hadrian, one day as Trajan was diſcourſing with this architect upon the buildings he had raiſed at Rome, would needs give his judgment, and ſhowed he underſtood nothing of the matter. Apollodorus turned upon him bluntly, and ſaid to him, Go paint gourds, for you are very ignorant of the ſubject we are talking upon. Hadrian at this time boaſted of his painting gourds well. This inſult coſt Apollodorus his life.

Apollodorus, a celebrated painter of Athens, about 408 years before the birth of Chriſt, was the firſt who invented the art of mingling colours, and of expreſſing the lights and ſhades. He was admired alſo for his judicious choice of ſubjects, and for beauty and ſtrength of colouring ſurpaſſed all the maſters that went before him. He excelled likewiſe in ſtatuary.

Apollodorus the Athenian, a famous grammarian, the ſon of Aſclepiades and diſciple of Ariſtarchus. He wrote many works not now extant: but his moſt famous production was his Bibliotheca, concerning the origin of the gods. This work conſiſted of 24 books, but only three are now in being. Several other pieces of his are to be found in Fabricius's *Bibliotheca Græca*.

Apollonia, Apollonius. There were various other perſons of this name. Scipio Tetti, a Neapolitan, has written a treatiſe of the Apollodoruſes, which was printed at Rome in 1555; and Dr Thomas Gale publiſhed a work of the ſame kind in 1675.

APOLLONIA, the name of ſeveral ancient cities, particularly of a colony of the Mileſians in Thrace, from which Lucullus took away a coloſſus of Apollo, and placed it in the capitol. The greateſt part of the town was ſituated in a ſmall iſland on the Euxine, in which was a temple of Apollo (Strabo). Pliny ſays the coloſſus was 30 cubits high, and coſt 500 talents. There was alſo an Apollonia at Mount Parnaſſus, near Delphi (Stephanus). Troezen was formerly called *Apollonia*.

APOLLONIA, feaſts ſacred to Apollo, inſtituted upon the following occaſion. Apollo, having vanquiſhed Python, went with his ſiſter Diana to Ægialea; but, being driven from thence, he removed to the iſland Crete. The Ægialeans were ſoon after viſited with a plague; upon which, conſulting the ſoothſayers, they were ordered to ſend ſeven young men and as many virgins, to appeaſe thoſe deities and bring them back into their country. Apollo and Diana being thus appeaſed, returned to Ægialea; in memory of which, they dedicated a temple to Pitho, the *goddeſs of perſuaſion*; whence a cuſtom aroſe of chooſing every year ſeven young men, and as many virgins, to go as it were in ſearch of Apollo and Diana.

APOLLONIA, in *Geography*, a promontory of Africa, upon the coaſt of Guinea, near the mouth of the river Mancu.

APOLLONIUS, the author of the *Argonautics*, and ſurnamed *The Rhodian*, from the place of his reſidence, is ſuppoſed to have been a native of Alexandria, where he is ſaid to have recited ſome portion of his poem while he was yet a youth. Finding it ill received by his countrymen, he retired to Rhodes; where he is conjectured to have poliſhed and completed his work, ſupporting himſelf by the profeſſion of rhetoric, and receiving from the Rhodians the freedom of their city. He at length returned, with conſiderable honour, to the place of his birth; ſucceeding Eratoſthenes in the care of the Alexandrian library in the reign of Ptolemy Euergetes, who aſcended the throne of Egypt in the year before Chriſt 246. That prince had been educated by the famous Ariſtarchus, and rivalled the preceding ſovereigns of his liberal family in the munificent encouragement of learning. Apollonius was a diſciple of the poet Callimachus; but their connexion ended in the moſt violent enmity, which was probably owing to ſome degree of contempt expreſſed by Apollonius for the light compoſitions of his maſter. The learned have vainly endeavoured to diſcover the particulars of their quarrel.—The only work of Apollonius which has deſcended to modern times is his poem above mentioned, in four books, on the Argonautic expedition. Both Longinus and Quintilian have aſſigned to this work the mortifying character of mediocrity: "But (ſays Mr Hayley) there lies an appeal from the ſentence of the moſt candid and enlightened critics to the voice of Nature; and the merit of Apollonius has little to apprehend from the deciſion of this ultimate judge. His poems abound in animated deſcription, and in paſſages of the moſt tender and pathetic beauty. How finely painted is the firſt ſetting forth of the Argo! and how beautifully is the wife of Chiron introduced, holding up the little Achilles in her arms, and ſhowing him to his father Peleus as he ſailed along the ſhore! But the chief excellence in our poet, is the ſpirit and delicacy with which he has delineated the paſſion of love in his Medea. That Virgil thought very highly of his merit in this particular, is ſufficiently evident from the minute exactneſs with which he has copied many tender touches of the Grecian poet. Thoſe who compare the third book of Apollonius with the fourth of Virgil, may, I think, perceive not only that Dido has ſome features of Medea, but that the two bards, however different in their reputation, reſembled each other in their genius; and they both excel in delicacy and pathos."—The ancient ſcholia upon his *Argonautics*, ſtill extant, are extremely uſeful, and full of learning. Apollonius, Apollos.

APOLLONIUS of Perga, a city of Pamphylia, was a great geometrician, under the reign of Ptolemy Euergetes, which reaches from the 2d year of the 133d Olympiad to the 3d year of the 139th. He ſtudied a long time at Alexandria, under the diſciples of Euclid; and compoſed ſeveral works, of which that only of the Conics remains.

APOLLONIUS, a Pythagorean philoſopher, born at Tyana in Cappadocia, about the beginning of the firſt century. At 16 years of age he became a ſtrict obſerver of Pythagoras's rules, renouncing wine, women, and all ſorts of fleſh; not wearing ſhoes, letting his hair grow, and wearing nothing but linen. He ſoon after ſet up for a reformer of mankind, and choſe his habitation in a temple of Æſculapius, where he is ſaid to have performed many wonderful cures. Philoſtratus has wrote the life of Apollonius, in which there are numberleſs fabulous ſtories recounted of him. We are told that he went five years without ſpeaking; and yet, during this time, that he ſtopped many ſeditions in Cilicia and Pamphylia: that he travelled, and ſet up for a legiſlator; and that he gave out he underſtood all languages, without having ever learned them: that he could tell the thoughts of men, and underſtood the oracles which birds gave by their ſinging. The Heathens were fond of oppoſing the pretended miracles of this man to thoſe of our Saviour; and by a treatiſe which Euſebius wrote againſt one Hierocles, we find that the drift of the latter, in the treatiſe which Euſebius refutes, ſeems to have been to draw a parallel betwixt Jeſus Chriſt and Apollonius, in which he gives the preference to this philoſopher. M. du Pin has wrote a confutation of Philoſtratus's life of Apollonius.

Apollonius wrote ſome works, viz. four books of judicial aſtrology; a treatiſe upon the ſacrifices, ſhowing what was proper to be offered to each deity; and a great number of letters; all of which are now loſt.

APOLLOS, in Scripture hiſtory, a Jew of Alexandria, who came to Epheſus during the abſence of St Paul, who was gone to Jeruſalem (Acts xviii. 24.) Apollos was an eloquent man, and well verſed in the Scriptures; and as he ſpoke with zeal and fervour, he taught diligently the things of God: but knowing only the baptiſm of John, he was no more than a catechumen, or one of the loweſt order of Chriſtians, and did not as yet diſtinctly know the myſteries of the Chriſtian doctrine. However, he knew that Jeſus Chriſt

Apollos || Apologue.

Chriſt was the Meſſiah, and declared himſelf openly to be his diſciple. When therefore he was come to Epheſus, he began to ſpeak boldly in the ſynagogue, and to ſhow that Jeſus was the Chriſt. Aquila and Priſcilla having heard him, took him home with them; inſtructed him more fully in the ways of God; and baptized him, probably in the name of Jeſus Chriſt.

Some time after this he had a mind to go into Achaia; and the brethren having exhorted him to undertake this journey, they wrote to the diſciples, deſiring them to receive him. He arrived at Corinth; and was there very uſeful in convincing the Jews out of the Scriptures, and demonſtrated to them that Jeſus was the Chriſt. Thus he watered what St Paul had planted in this city (1 Cor. iii. 6.) but the great fondneſs which his diſciples had for his perſon had like to have produced a ſchiſm; ſome "ſaying, I am of Paul; others, I am of Apollos; I am of Cephas." However, this diviſion which St Paul ſpeaks of in the chapter laſt quoted, did not prevent that apoſtle and Apollos from being cloſely united by the bands of charity. Apollos hearing that the apoſtle was at Epheſus, went to meet him, and was there when St Paul wrote the firſt epiſtle to the Corinthians; wherein he teſtifies that he had earneſtly entreated Apollos to return to Corinth, but hitherto had not been able to prevail with him; that, nevertheleſs, he gave him room to hope that he would go when he had an opportunity. St Jerome ſays, that Apollos was ſo diſſatisfied with the diviſion which had happened upon his account at Corinth, that he retired into Crete with Zena, a doctor of the law; and that this diſturbance having been appeaſed by the letter which St Paul wrote to the Corinthians, Apollos returned to this city, and was biſhop thereof. The Greeks make him biſhop of Duras; others ſay, he was biſhop of Iconium in Phrygia; and others, that he was biſhop of Cæſarea.

APOLLYON, a Greek word that ſignifies *the deſtroyer*, and anſwers to the Hebrew *Abaddon*. St John in the Revelation (ix. 11.) ſays, that an angel having opened the bottomleſs pit, a thick ſmoke iſſued out of it; and with this ſmoke locuſts, like horſes, prepared for battle, and commanded by the angel of the bottomleſs pit, called in Hebrew *Abaddon*, but in the Greek *Apollyon*.

APOLOGETIC, Apologetical, ſomething ſaid or written, by way of excuſe or apology, for any action or perſon.

The Apologetic of Tertullian is a work full of ſtrength and ſpirit. He there vindicates the Chriſtians from all that had been objected to them; particularly from the abominable crimes ſaid to be perpetrated at their meetings, and their want of love and fidelity to their country. The ground of this laſt accuſation was, their refuſing to take the accuſtomed oaths, and ſwear by the tutelar gods of the empire.—Tertullian addreſſes his Apologetic to the magiſtrates of Rome, the empetor Severus being then abſent.

APOLOGUE, in matters of literature, an ingenious method of conveying inſtruction by means of a feigned relation called a *moral fable*.

The only difference between a parable and an apologue is, that the former, being drawn from what paſſes among mankind, requires probability in the narration; whereas the apologue, being taken from the ſuppoſed actions of brutes, or even of things inanimate, is not tied down to the ſtrict rules of probability. Æſop's fables are a model of this kind of writing.

APOLOGY, a Greek term, literally importing an excuſe or defence of ſome perſon or action.

APOMELI, among ancient phyſicians, a decoction of honey and vinegar, much uſed as a detergent, promoter of ſtool, urine, &c.

APOMYOS DEUS (ἀπὸ, and μυῖα, *fly*), in the Heathen mythology, a name under which Jupiter was worſhipped at Elis, and Hercules as well as Jupiter at the Olympic games. Theſe deities were ſuppoſed under this name, to diſlodge or drive away the vaſt numbers of flies which always attended at the great ſacrifices; and in thoſe which accompanied the Olympic games, the firſt was always to the Apomyos, or Myiagrus Deus, that he might drive away the flies from the reſt. The uſual ſacrifice was a bull.

APONEUROSIS, among phyſicians, a term ſometimes uſed to denote the expanſion of a nerve or tendon in the manner of a membrane: ſometimes for the cutting off a nerve; and, finally, for the tendon itſelf.

APONO, Peter d', one of the moſt famous philoſophers and phyſicians of his age, born in the year 1350, in a village about four miles from Padua. He ſtudied ſome time at Paris, and was there promoted to the degree of doctor in philoſophy and phyſic. When he came to practiſe as a phyſician, he is ſaid to have inſiſted on very large ſums for his viſits: we are not told what he demanded for the viſits he made in the place of his reſidence; but it is affirmed, that he would not attend the ſick in any other place under 150 florins a-day; and when he was ſent for by Pope Honorius IV. he demanded 400 ducats for each day's attendance. He was ſuſpected of magic, and proſecuted by the Inquiſition on that account. "The common opinion of almoſt all authors (ſays Naude) is, that he was the greateſt magician of his age; that he had acquired the knowledge of the ſeven liberal arts, by means of the ſeven familiar ſpirits, which he kept encloſed in a cryſtal; and that he had the dexterity to make the money he had ſpent come back into his purſe." The ſame author adds, that he died before the proceſs againſt him was finiſhed, being then in the 80th year of his age; and that, after his death, they ordered him to be burnt in effigy, in the public place of the city of Padua; deſigning thereby to ſtrike a fear into others of incurring the like puniſhment, and to ſuppreſs the reading three books which he had wrote; the firſt being the Heptameron, which is printed at the end of the firſt volume of Agrippa's work; the ſecond, that which is called by Trithemius *Elucidarium necromanticum Petri de Albano*; and the laſt, that which is entitled by the ſame author, *Liber experimentorum mirabilium de annulis ſecundum ſeptem planetas*. His body being ſecretly taken up by his friends, eſcaped the vigilance of the inquiſitors, who would have burnt it. It was removed ſeveral times, and was at laſt placed in the church of St Auguſtin, without an epitaph or any mark of honour. The moſt remarkable book which Apono wrote, was that which procured him the ſurname of *Conciliator*; he wrote alſo a piece entitled *De medicina omnimoda*. There is a ſtory told of him, that, having no well in his houſe, he cauſed his neighbour's to be carried into the ſtreet by devils, who

Apollo too ‖ Aporia.

when he heard they had forbidden his maid fetching water thence. He had much better (ſays Mr Bayle) have employed the devils to make a well in his own houſe, and have ſtopped up his neighbour's; or, at leaſt, tranſported it into his houſe, rather than into the Priest.

APONOGETON. See Botany *Index*.

APONUS, a hamlet near Patavium, with warm baths. It was the birth-place of Livy, (Martial); and is now called *Albano*. E. Long. 10. N. Lat. 45 15.

APOPEMPTIC, in the ancient poetry, a hymn addreſſed to a ſtranger on his departure from a place to his own country. The ancients ſeem to have had days, wherein they took leave of their friends with *apopemptic* ſongs, as ſuppoſing them returning each to his own country. The deities having the patronage of divers places, it was but juſt to divide their preſents, and allow ſome time to each. Hence it was, that among the Delians and Mileſians we find feaſts of Apollo, and among the Argians feaſts of Diana, called *Epidemiæ*, as ſuppoſing theſe deities then more peculiarly reſident among them. On the laſt day of the feaſt they diſmiſſed them, following them to the altars with *apopemptic* hymns.

APOPHASIS, a figure in *Rhetoric*, by which the orator, ſpeaking ironically, ſeems to wave what he would plainly inſinuate: as, *Neither will I mention thoſe things; which, if I ſhould, you notwithſtanding could neither confute, nor ſpeak againſt them.*

APOPHLEGMATIZANTS, in *Pharmacy*, medicines proper to clear the head from ſuperfluous phlegm, whether by ſpitting or by the noſe.

APOPHTHEGM, a ſhort, ſententious, and inſtructive remark, pronounced by a perſon of diſtinguiſhed character. Such is that of Cyrus: *He is unworthy to be a magiſtrate, who is not better than his ſubjects.* Or this: *He that will not take care of his own buſineſs, will be forced to take care of that of others.* Or that of Artaxerxes Mnemon, when reduced to hunger by the loſs of his baggage: *How much pleaſure have I hitherto lived a ſtranger to?* Or that of Cato, *Homines nihil agendo diſcunt malè agere.* Or, finally, that of Auguſtus, *Feſtina, lentè.* The apophthegms of Plutarch are well known.

APOPHYGE, in *Architecture*, a concave part or ring of a column, lying above or below the flat member. The French call it *le conge d'en bas*, or *d'en haut*: the Italians, *cavo di baſſo*, or *di ſopra*; and alſo *il vivo di baſſo*. The apophyge originally was no more than the ring, or ferril, at firſt fixed on the extremities of wooden pillars, to keep them from ſplitting; which afterwards was imitated in ſtone.

APOPHYSIS, in *Anatomy*, a proceſs or protuberance of a bone. See Anatomy.

APOPLEXY, a diſtemper in which the patient is ſuddenly deprived of all his ſenſes, and of voluntary motion. See Medicine *Index*.

APORIA, is a figure in *Rhetoric*, by which the ſpeaker ſhows, that he doubts where to begin for the multitude of matter, or what to ſay in ſome ſtrange and ambiguous thing; and doth, as it were, argue the caſe with himſelf. Thus Cicero ſays, *Whether he took them from his fellows more impudently, gave them to a harlot more laſciviouſly, removed them from the Roman people more wickedly, or altered them more preſumptuouſly, I cannot well declare.*

Aporia. Aporism.

APORON, or Aporime, a problem difficult to reſolve, and which has never been reſolved, though it be not, in itſelf, impoſſible.

The word is derived from ἄπορος, which ſignifies ſomething very difficult, and not eaſily paſſable; being formed from the privative α, and πορος, *paſſage*. Such we conceive the quadrature of the circle; the duplicature of the cube; the triſection of an angle, &c. When a queſtion was propoſed to any of the Greek philoſophers, eſpecially of the ſect of Academiſts; if he could not give a ſolution, his anſwer was Απορεω, *I cannot ſee through it.*—This word is alſo uſed by ſome law writers for an unexpicable ſpeech or diſcourſe.

APOSIOPESIS, in *Rhetoric*, otherwiſe called *reticency*, and *ſuppreſſion*; a figure, by which a perſon really ſpeaks of a thing, at the ſame time that he makes a ſhow as if he would ſay nothing of it. The word comes from αποσιωπαω, *I am ſilent.*—It is commonly uſed to denote the ſame with ELLIPSIS. Jul. Scaliger diſtinguiſhes them. The latter, according to him, being only the ſuppreſſion of a word; as, *me, me; adſum qui feci*; the former, the omitting to relate ſome part of the action; as,

Dixerat, atque illam media inter talia ferro
Collapſam aſpicunt——————

where the poet does not mention how Dido killed herſelf.—This figure is of uſe to keep up the grandeur and ſublimity of a diſcourſe.

APOSPHRAGISMA, (from απο, and σφραγιζω, *I ſeal*), in antiquity, the figure or impreſſion of a ſeal.—It was forbid among the ancients to have the figure or image of God on their rings and ſeals. To this purpoſe the precept of Pythagoras, Εν δακτυλιω εικονα Θεου μη περιφερειν! But in proceſs of time, this was little regarded; it was uſual enough to have the figures of Egyptian and other deities, as well as of heroes, monſters, friends, anceſtors, and even brutes, on their *dactyli*, or ring-ſeals. Thus Cæſar had the image of Venus, Pollio of Alexander, Auguſtus of the *Sphinx*, Pompey of a frog, Lentulus of his grandfather, &c.

APOSTASIS, in *Medicine*, the ſame with abſceſs.

APOSTASY, the abandoning the true religion. The primitive Chriſtian church diſtinguiſhed ſeveral kinds of apoſtaſy. The firſt, of thoſe who went over entirely from Chriſtianity to Judaiſm; the ſecond, of thoſe who mingled Judaiſm and Chriſtianity together; and the third, of thoſe who complied ſo far with the Jews, as to communicate with them in many of their unlawful practices, without making a formal profeſſion of their religion. But the fourth ſort was of thoſe who, after having been ſometime Chriſtians, voluntarily relapſed into Paganiſm.

The perverſion of a Chriſtian to Judaiſm, Paganiſm, or other falſe religion, was puniſhed by the emperors Conſtantius and Julian with confiſcation of goods; to which the emperors Theodoſius and Valentinian added capital puniſhment, in caſe the apoſtate endeavoured to pervert others to the ſame iniquity: A puniſhment too ſevere for any temporal laws to inflict; and yet the zeal of our anceſtors imported it into this country; for we find by Bracton, that in his time apoſtates were to be

Apoſtaſy ‖ Apoſtle.

be burnt to death. Doubtleſs the preſervation of Chriſtianity, as a national religion, is, abſtracted from its own intrinſic truth, of the utmoſt conſequence to the civil ſtate: which a ſingle inſtance will ſufficiently demonſtrate. The belief of a future ſtate of rewards and puniſhments, the entertaining juſt ideas of the moral attributes of the ſupreme Being, and a firm perſuaſion that he ſuperintends and will finally compenſate every action in human life (all which are clearly revealed in the doctrines, and forcibly inculcated by the precepts, of our Saviour Chriſt), theſe are the grand foundation of all judicial oaths: which call God to witneſs the truth of thoſe facts, which perhaps may be only known to him and the party atteſting: all moral evidence therefore, all confidence in human veracity, muſt be weakened by apoſtaſy, and overthrown by total infidelity. Wherefore all affronts to Chriſtianity, or endeavours to depreciate its efficacy, in thoſe who have once profeſſed it, are highly deſerving of cenſure. But yet the loſs of life is a heavier penalty than the offence, taken in a civil light, deſerves; and, taken in a ſpiritual light, our laws have no juriſdiction over it. This puniſhment, therefore, has long ago become obſolete; and the offence of apoſtaſy was for a long time, the object only of the eccleſiaſtical courts, which corrected the offender *pro ſalute animæ*. But about the cloſe of the laſt century, the civil liberties to which we were then reſtored being uſed as a cloak of maliciouſneſs, and the moſt horrid doctrine ſubverſive of all religion being publicly avowed both in diſcourſe and writings, it was thought neceſſary again for the civil power to interpoſe, by not admitting thoſe miſcreants to the privileges of ſociety, who maintained ſuch principles as deſtroyed all moral obligation. To this end it was enacted, by ſtatue 9 and 10 William III. c. 32. That if any perſon educated in, or having made profeſſion of, the Chriſtian religion, ſhall by writing, printing, teaching, or advized ſpeaking, deny the Chriſtian religion to be true, or the holy Scriptures to be of divine authority, he ſhall upon the firſt offence be rendered incapable to hold any office or place of truſt; and, for the ſecond, be rendered incapable of bringing any action, or of being guardian, executor, legatee, or purchaſer of lands, and ſhall ſuffer three years impriſonment without bail. To give room, however, for repentance, if, within four months after the firſt conviction, the delinquent will in open court publicly renounce his error, he is diſcharged for that once from all diſabilities.

APOSTATA CAPIENDO, in the *Engliſh Law*, a writ that formerly lay againſt a perſon who, having entered into ſome order of religious, broke out again, and wandered up and down the country.

APOSTATE, one who deſerts his religion. Among the Romaniſts, it ſignifies a man who, without a legal diſpenſation, forſakes a religious order of which he had made profeſſion.

A POSTERIORI, or demonſtration *à poſteriori*. See DEMONSTRATION.

APOSTIL, in matters of literature, the ſame with a marginal note.

APOSTLE properly ſignifies a meſſenger or perſon ſent by another upon ſome buſineſs; and hence, by way of eminence, denotes one of the diſciples commiſſioned by Jeſus Chriſt to preach the goſpel.

Our bleſſed Lord ſelected twelve out of the number of his diſciples to be inveſted with the apoſtleſhip. Their names were Simon Peter, Andrew, James the greater, John, Philip, Bartholomew, Thomas, Matthew, James the leſs, Jude ſurnamed Lebbeus or Thaddeus, Simon the Canaanite, and Judas Iſcariot. Of theſe Simon, Andrew, James the greater, and John, were fiſhermen; and Matthew a publican, or receiver of the public revenues: of what profeſſion the reſt were, we are not told in Scripture; though it is probable they were fiſhermen. Apoſtle

There are various conjectures as to the reaſon of our Saviour's making choice of *twelve* apoſtles. The moſt probable is, that it might be in alluſion to the twelve patriarchs, as the founders of their ſeveral tribes; or to the twelve chief heads or rulers of thoſe tribes, of which the body of the Jewiſh nation conſiſted. This opinion ſeems to be countenanced by what our Saviour tells his apoſtles, viz. "when the Son of man ſhall ſit on the throne of his glory, *they* alſo ſhall ſit upon twelve thrones judging the twelve tribes of Iſrael."

Our Lord's firſt commiſſion to his apoſtles was in the third year of his public miniſtry, about eight months after their ſolemn election; at which time he ſent them out by two and two. They were to make no proviſion of money for their ſubſiſtence in their journey, but to expect it from thoſe to whom they preached. They were to declare, that the kingdom of heaven, or the Meſſiah, was at hand; and to confirm their doctrine by miracles. They were to avoid going either to the Gentiles or to the Samaritans, and to confine their preaching to the people of Iſrael. In obedience to their Maſter, the apoſtles went into all the parts of Paleſtine inhabited by the Jews, preaching the goſpel, and working miracles. The evangelical hiſtory is ſilent as to the particular circumſtances attending this firſt preaching of the apoſtles; and only informs us, that they returned, and told their Maſter of all that they had done.

Their ſecond commiſſion, juſt before our Lord's aſcenſion into heaven, was of a more extenſive and particular nature. They were now not to confine their preaching to the Jews, but to "go and teach ALL nations, baptizing them in the name of the Father, and of the Son, and of the Holy Ghoſt." Accordingly they began publicly, after our Lord's aſcenſion, to exerciſe the office of their miniſtry, working miracles daily in proof of their miſſion, and making great numbers of converts to the Chriſtian faith. This alarmed the Jewiſh Sanhedrim; whereupon the apoſtles were apprehended, and, being examined before the high prieſt and elders, were commanded not to preach any more in the name of Chriſt. But this injunction did not terrify them from perſiſting in the duty of their calling; for they continued daily, in the temple, and in private houſes, teaching, and preaching the goſpel.

After the apoſtles had exerciſed their miniſtry for twelve years in Paleſtine, they reſolved to diſperſe themſelves in different parts of the world, and agreed to determine by lot what parts each ſhould take. According to this diviſion, St Peter went into Pontus, Galatia, and thoſe other provinces of the Leſſer Aſia. St Andrew had the vaſt northern countries of Scythia and Sogdiana allotted to his portion. St John's was partly the ſame with Peter's, namely the Leſſer Aſia.

St

Apostle. St Philip had the Upper Asia assigned to him, with some parts of Scythia and Colchis. Arabia Felix fell to St Bartholomew's share. St Matthew preached in Chaldea, Persia, and Parthia. St Thomas preached likewise in Parthia; as also to the Hyrcanians, Bactrians, and Indians. St James the less continued in Jerusalem, of which church he was bishop. St Simon had for his portion Egypt, Cyrene, Libya, and Mauritania; St Jude, Syria and Mesopotamia; and St Matthias, who was chosen in the room of the traitor Judas, Cappadocia and Colchis. Thus, by the dispersion of the apostles, Christianity was very early planted in a great many parts of the world. We have but very short and imperfect accounts of their travels and actions.

In order to qualify the apostles for the arduous task of converting the world to the Christian religion, they were, in the first place, miraculously enabled to speak the languages of the several nations to whom they were to preach: and, in the second place, were endowed with the power of working miracles, in confirmation of the doctrines they taught; gifts which were unnecessary, and therefore ceased, in the after ages of the church, when Christianity came to be established by the civil power.

St Paul is frequently called the *apostle*, by way of eminence; and the *apostle of the Gentiles*, because his ministry was chiefly made use of for the conversion of the Gentile world, as that of St Peter was for the Jews, who is therefore styled the *apostle of the circumcision*. The several apostles are usually represented with their respective badges or attributes; St Peter with the keys; St Paul with a sword; St Andrew with a cross or saltier; St James minor with a fuller's pole; St John with a cup, and winged serpent flying from it; St Bartholomew with a knife; St Philip with a long staff, whose upper end is formed into a cross; St Thomas with a lance; St Matthew with a hatchet; St Matthias with a battle axe; St James major with a pilgrim's staff and a gourd bottle; St Simon with a saw; and St Jude with a club.

This appellation was also given to the ordinary travelling ministers of the church.—Thus St Paul, in the Epistle to the Romans xvii. 7. says, "Salute Andronicus and Junia, my kinsmen and fellow prisoners, who are of note among the apostles." It was likewise a title given to those sent by the churches to carry their alms to the poor of other churches. This usage they borrowed from the synagogues, who called those whom they sent on this message by the same name; and the function or office itself αποστολη, *apostle*, q. d. *mission*. Thus St Paul, writing to the Philippians, tells them that Epaphroditus their apostle had ministered to his wants, ch. ii. 25.

The appellation is given in like manner to those persons who first planted the Christian faith in any place. Thus Dionysius of Corinth is called the *apostle of France*; Xavier, the *apostle of the Indies*, &c. In the East Indies the Jesuit missionaries are also called *apostles*.

Apostle is also used among the Jews for a kind of officer anciently sent into the several parts and provinces in their jurisdiction, by way of visitor or commissary, to see that the laws were duly observed, and to receive the moneys collected for the reparation of the temple, and the tribute payable to the Romans. Apostle. The Theodosian code. lib. 14. *De Judæis*, calls those *apostoli, qui ad exigendum aurum atque argentum, à patriarcha certo tempore dirigunturi*. Julian the apostate remitted the Jews the *apostle*, αποστολη; that is, as he himself explains it, the tribute they had been accustomed to send him. These apostles were a degree below the officers of the synagogue called *patriarchs*, and received their commissions from them. Some authors observe, that St Paul had borne this office; and that it is this he alludes to in the beginning of the epistle to the Galatians: as if he had said, Paul, no longer an apostle of the synagogue, nor sent thereby to maintain the law of Moses, but now an apostle and envoy of Jesus Christ, &c. St Jerome, though he does not believe that St Paul had been an apostle of this kind, yet imagines that he alludes to it in the passage just cited.

Apostle, in the Greek liturgy, is particularly used for a book containing the epistles of St Paul, printed in the order wherein they are to be read in churches, through the course of the year. Another book of the like kind, containing the Gospels, is called Ευαγγελιον, *Gospel*.—The apostle, of late days, has also contained the other canonical epistles, the Acts of the Apostles, and the Revelation. Hence it is also called *Acts of the Apostles*, Πραξαποστολος; that being the first book in it.

Apostle is also thought by many to have been the original name for bishops, before the denomination *bishop* was appropriated to their order. Thus Theodoret says expressly, the same persons were anciently called promiscuously both bishops and presbyters, whilst those who are now called bishops were called *apostles*. In the arsenal of Bremen, there are twelve pieces of cannon called the *Twelve Apostles*, on a supposition that the whole world must be convinced, and acquiesce in the preaching of such apostles.

Apostles Creed: a formula, or summary of the Christian faith, drawn up, according to Ruffinus, by the apostles themselves: who, during their stay at Jerusalem, soon after our Lord's ascension, agreed upon this *creed*, as a rule of faith, and as a *word of distinction* by which they were to know friends from foes. Baronius, and some other authors, conjecture, that they did not compose it till the second year of the reign of Claudius, a little before their dispersion. As to their manner of composing it, some fancy, that each apostle pronounced his article, which is the reason of its being called *symbolum apostolicum*, it being made up of sentences jointly contributed, after the manner of persons paying each their club (*symbolum*) or share of a reckoning.

But there are reasons which may induce us to question whether the apostles composed any such creed as this. For, first, Neither St Luke in the Acts, nor any other ecclesiastical writer before the 5th century, make any mention of an assembly of the apostles in order to the composing of a creed. Secondly, The fathers of the three first centuries, in disputing against the heretics, endeavoured to prove that the doctrine contained in this creed was the same which the apostles taught; but they never pretend that the apostles composed it. Thirdly, If the apostles had made this creed, it would have been the same in all churches, and in all ages;

and

Apoſtolare
||
Apoſtolic.

and all authors would have cited it after the ſame manner. But the caſe is quite otherwiſe. In the ſecond and third ages of the church, there were as many creeds as authors, and one and the ſame author lets down the creed after a different manner in ſeveral places of his works; which is an evidence that there was not at that time any creed which was reputed to be the apoſtles. In the 4th century, Ruffinus compares together the three ancient creeds of the churches of Aquileia, Rome, and the Eaſt, which differ very conſiderably in the terms. Beſides, theſe creeds differed not only in the terms and expreſſions, but even in the articles, ſome of which were omitted in one or other of them; ſuch as thoſe of the *deſcent into hell*, the *communion of the ſaints*, and the *life everlaſting*. From theſe reaſons it may be gathered, that though this creed may be ſaid to be that of the apoſtles in regard to the doctrines contained therein, yet it is not to be referred to them as the authors and firſt compoſers of it. Who was the true author of it, is not ſo eaſy to determine; though its great antiquity may be inferred from hence, that the whole form, as it now ſtands in the Engliſh liturgy, is to be found in the works of St Ambroſe and Ruffinus, the former of whom flouriſhed in the 3d century, and the latter in the 4th century.

The primitive Chriſtians, in regard they always concealed this and their other myſteries, did not publicly recite the creed, except at the times of baptiſm; which, unleſs in caſes of neceſſity, were only at Eaſter and Whitſuntide. The conſtant repeating it was not introduced into the church till the end of the 5th century; about which time Petrus Gnapheus, biſhop of Antioch, preſcribed the recital of it every time divine ſervice was performed.

APOSTOLARE, Apostolicare, *apoſtolizing*, in ſome middle age writers, denotes the being preferred to the dignity of pope.

APOSTOLATE, in a general ſenſe, is uſed for miſſion. In this ſenſe, Olearius has a diſcourſe concerning the apoſtolate of Chriſt.

Apostolate more properly denotes the dignity or office of an apoſtle of Chriſt; but it is alſo uſed, in ancient writers, for the office of a biſhop. In this ſenſe we meet with ſeveral letters, petitions, requeſts, &c. directed to biſhops, under the title of your *apoſtolate*, or *apoſtolatus veſter*. But as the title *apoſtolicus* had been appropriated to the pope, ſo that of *apoſtolate* became at length reſtrained to the ſole dignity of the popedom. Every biſhop's ſee was anciently dignified with the title of *ſedes apoſtolica*, an apoſtolical ſee, which is now the peculiar denomination of the ſee of Rome.

APOSTOLI, in *Law*, denote thoſe letters miſſive which are demanded in caſes of appeal.

APOSTOLIC, Apostolical, ſomething that relates to the apoſtles, or deſcends from them. Thus we ſay, the *apoſtolical* age, *apoſtolical* doctrine, *apoſtolical* character, conſtitutions, traditions, &c.

Apostolic, in the primitive church, was an appellation given to all ſuch churches as were founded by the apoſtles; and even to the biſhops of thoſe churches, as being the reputed ſucceſſors of the apoſtles.—Theſe were confined to four, viz. Rome, Alexandria, Antioch, and Jeruſalem. In after times, other churches aſſumed the ſame quality, on account, principally, of the conformity of their doctrine with that of the churches which were apoſtolical by foundation, and becauſe all biſhops held themſelves ſucceſſors of the apoſtles, or acted in their dioceſe with the authority of apoſtles.

Apoſtolic

The firſt time the term *apoſtolical* is attributed to biſhops, as ſuch, is in a letter of Clovis to the council of Orleans, held in 511, though that king does not there expreſsly denominate them *apoſtolical* (but *apoſtolica ſede auguſtus*) his title would of the apoſtolical ſee. In 581, Guntram calls the biſhops, met at the council of Macon, *apoſtolical pontiffs*, *apoſtolici pontifices*.

In progreſs of time, the biſhop of Rome growing in power above the reſt, and the three patriarchates of Alexandria, Antioch, and Jeruſalem, falling into the hands of the Saracens, the title *apoſtolical* was reſtrained to the pope and his church alone. Though ſome of the popes, and St Gregory the Great, not contented to hold the title by this tenure, began, at length, to inſiſt, that it belonged to them by another and peculiar right, as being the ſucceſſors of St Peter. The council of Rheims in 1049 declared that the pope was the ſole apoſtolical primate of the univerſal church. And hence a great number of apoſtolicals; *apoſtolical* ſee, *apoſtolical* nuncio, *apoſtolical* notary, *apoſtolical* brief, *apoſtolical* chamber, *apoſtolical* vicar, &c.

Apostolical Conſtitutions. See Constitution.

Apostolical Traditions. See Tradition.

Apostolical Fathers is an appellation uſually given to the writers of the firſt century who employed their pens in the cauſe of Chriſtianity. Of theſe writers, Cotelerius, and after him Le Clerc, have publiſhed a collection in two volumes, accompanied both with their own annotations and the remarks of other learned men.

APOSTOLIANS, a ſect of the Mennonites, which firſt ſprung up in the year 1664, and derived its name from Apoſtool, one of the Mennonite miniſters at Amſterdam. They concurred with them in doctrine, and admitted to their communion thoſe only who profeſſed to believe all the ſentiments which are contained in their public confeſſion of faith.

APOSTOLICI, or Apostolics, was a name aſſumed by three different ſects, on account of their pretending to imitate the manner and practice of the apoſtles. The firſt apoſtolici, otherwiſe called *Apotactitæ* and *Apotactici*, roſe out of the Encratitæ, and Catharri in the third century. They made profeſſion of abſtaining from marriage, and the uſe of wine, fleſh, money, &c.

Gerhard Sagarelli was the founder of the ſecond ſect; he obliged his followers to go from place to place as the apoſtles did, to wander about clothed in white, with long beards, diſhevelled hair, and bare heads, accompanied with women, whom they called their ſpiritual ſiſters. They likewiſe renounced all kinds of property and poſſeſſions, inveighed againſt the growing corruption of the church of Rome, predicted its overthrow, and the eſtabliſhment of a purer church on its ruins. Sagarelli was burnt alive at Parma in the year 1300, and was afterwards ſucceeded by Dulcinus, who added to the character of an apoſtle thoſe of a prophet and a general, and carried on a bloody

Apoſtolicum || Apoteichiſmus.

and dreadful war for the ſpace of more than two years againſt Reynerius, biſhop of Vercelli; he was at length defeated, and put to death in a barbarous manner in the year 1307. Nevertheleſs, this ſect ſubſiſted in France, Germany, and in other countries, till the beginning of the fifteenth century, when it was totally extirpated under the pontificate of Boniface IX.

The other branch of apoſtolici was of the twelfth century. Theſe alſo condemned marriage, preferring celibacy, and calling themſelves the chaſte brethren and ſiſters; though each was allowed a ſpiritual ſiſter, with whom he lived in a domeſtic relation; and on this account they have been charged with concubinage: they held it unlawful to take an oath; they ſet aſide the uſe of baptiſm; and in many things imitated the Manichees. Bernard wrote againſt this ſect of apoſtolici.

APOSTOLICUM is a peculiar name given to a kind of ſong or hymn, anciently uſed in churches. The apoſtolicum is mentioned by Greg. Thaumaturgus as uſed in his time. Voſſius underſtands it as ſpoken of the apoſtles creed: Suicer thinks this impoſſible, for that this creed was then unknown in the churches of the eaſt.

APOSTROPHE, in *Rhetoric*, a figure by which a perſon who is either abſent or dead is addreſſed as if he were preſent and attentive to us. This figure is, in boldneſs, a degree lower than the addreſs to perſonified objects (See PERSONIFICATION); ſince it requires a leſs effort of imagination to ſuppoſe perſons preſent who are dead or abſent, than to animate inſenſible beings and direct our diſcourſe to them. The poems of Oſſian abound with the moſt beautiful inſtances of this figure. "Weep on the rocks of roaring winds, O Maid of Iniſtore! Bend thy fair head over the waves, thou fairer than the ghoſt of the hills when it moves in a ſunbeam at noon over the ſilence of Morven! He is fallen! Thy youth is low: pale beneath the ſword of Cuchullin!

APOSTROPHE, in *Grammar*, the contraction of a word by the uſe of a comma: as *call'd* for *called*, *tho'* for *though*.

APOTACTITÆ, or APOTACTICI, an ancient ſect, who affecting to follow the evangelical counſels of poverty, and the examples of the apoſtles and primitive Chriſtians, renounced all their effects and poſſeſſions. It does not appear that they gave into any errors during their firſt ſtate; ſome eccleſiaſtical writers aſſure us they had divers holy virgins and martyrs under the perſecution of Dioclesian in the fourth century; but they afterwards fell into the opinions of the Encratitæ, and taught that the renouncing of all riches was not only a matter of counſel and advice, but of precept and neceſſity. And hence the ſixth law in the Theodoſian code joins the Apotactitæ with the Eunomians and Arians.

APOTEICHISMUS, in the *Ancient Military Art*, a kind of line of circumvallation drawn round a place in order to beſiege it. This was alſo called *periteichiſmus*. The firſt thing the ancients went about, when they deſigned to lay cloſe ſiege to a place, was the apoteichiſmus; which ſometimes conſiſted of a double wall or rampart, raiſed of earth; the innermoſt to prevent ſudden ſallies from the town, the outermoſt to keep off foreign enemies from coming to the relief of the beſieged. This anſwered to what are called *lines of contravallation* and *circumvallation* among the moderns.

Apothecary || Apotheoſis.

APOTHECARY, one who practiſes the art of pharmacy. In London, the apothecaries are one of the city companies. They were incorporated by a charter from King James I. procured at the ſolicitation of Dr Mayerne and Dr Aitkens; till that time they only made a part of the grocers company; plums, ſugar, ſpice, Venice treacle, mithridate, &c. were ſold in the ſame ſhop and by the ſame perſon. The reaſon of ſeparating them was, that medicines might be better prepared, and in oppoſition to divers perſons who impoſed unwholeſome remedies on the people. By an act which was made perpetual in the ninth year of George I. they are exempted from ſerving upon juries, or in ward and pariſh offices. They are obliged to make up their medicines according to the formulas preſcribed in the college diſpenſatory; and are liable to have their ſhops viſited by the cenſors of the college, who are empowered to deſtroy ſuch medicines as they think not good.

They have a hall in Black Friars, where there are two fine laboratories, out of which all the ſurgeons cheſts are ſupplied with medicines for the Britiſh royal navy.

To his majeſty belong two apothecaries: the ſalary to the firſt, 320l.; to the ſecond, 275l.—To the houſehold belong alſo two.

The charitable diſpenſation of medicines by the Chineſe is well deſerving notice. They have a ſtone, which is ten cubits high, erected in the public ſquares of their cities; on this ſtone are engraved the names of all ſorts of medicines, with the price of each; and when the poor ſtand in need of any relief from phyſic, they go to the treaſury, where they receive the price each medicine is rated at.

APOTHECARY, *Apothecarius*, in writers of the middle age, denotes a ſhop-keeper or warehouſe-keeper.

APOTHECARIUS is alſo uſed to denote a ſtore-keeper, or officer appointed to have the direction of a magazine, granary, &c. In which ſenſe *apothecarii* is ſometimes rendered by *horearii* and *rationarii*.

APOTHEOSIS, in antiquity, a heathen ceremony, whereby their emperors and great men were placed among the gods. The word is derived from ἀπὸ, and Θεὸς, *God*.

After the apotheoſis, which they alſo called *deification* and *conſecration*, temples, altars, and images were erected to the new deity; ſacrifices, &c. were offered and colleges of prieſts inſtituted.

It was one of the doctrines of Pythagoras, which he had borrowed from the Chaldees, that virtuous perſons after their death were raiſed into the order of the gods. And hence the ancients deified all the inventors of things uſeful to mankind; and thoſe who had done any important ſervice to the commonwealth. Tiberius propoſed to the Roman ſenate the apotheoſis of Jeſus Chriſt, as is related by Euſebius, Tertullian, and Chryſoſtom.

Juvenal rallying the frequent apotheoſes, introduces poor Atlas, complaining that he was ready to ſink under the burden of ſo many new gods as were every day added to the heavens. Seneca ridicules the apotheoſis of Claudius with admirable humour.

The ceremony, according to Herodian's deſcription, was

Apotherapia || Apparatus.

was as follows: After the body of the deceaſed had been burnt with the uſual ſolemnities, an image of wax, exactly reſembling him, was placed on an ivory couch, where it lay for ſeven days, attended by the ſenate and ladies of the higheſt quality in mourning; and then the young ſenators and knights bore the bed of ſtate through the Via Sacra to the old forum, and from thence to the Campus Martius, where it was depoſited upon an edifice built in form of a pyramid. The bed being thus placed amidſt a quantity of ſpices and other combuſtibles, and the knights having made a ſolemn proceſſion round the pile, the new emperor, with a torch in his hand ſet fire to it, whilſt an eagle, let fly from the top of the building, and mounting in the air with a firebrand, was ſuppoſed to convey the ſoul of the deceaſed to heaven; and thenceforward he was ranked among the gods.

We often meet with the conſecration or apotheoſis of emperors repreſented on medals; where we ſee the pyramids of ſeveral ſtories, each growing leſs and leſs; we ſee alſo the eagles flying away with the ſouls of the deceaſed emperors. A gem in the muſeum of Brandenburg repreſents the apotheoſis of Julius Cæſar, mounted upon the celeſtial globe, and holding a helm in his hand, as if he were now the governor of heaven, as before of the earth. See DEIFICATION.

APOTHERAPIA, (from *αποθεραπευω*, *I cure*), in *Phyſic*, properly denotes a complete or finiſhed cure.

APOTHERAPIA is alſo uſed in the gymnaſtic art, for the laſt part of all regular exerciſe, viz. friction or unction with oil, before as well as after bathing. The deſign of this was partly to cleanſe the ſkin from any filth or duſt it might have contracted during the exerciſe, and partly to remove wearineſs.

APOTOME, in *Geometry*, the difference between two incommenſurable lines.

APOTOME, in *Muſic*, the difference between a greater and leſſer ſemi-tone; expreſſed by the ratio, 128; 125.

APOTROPÆ, (from *αποτρεπω*, *I avert*), in the ancient poetry, verſes compoſed for averting the wrath of incenſed deities; and the deities invoked for averting any threatened misfortune were called *Apotropeans*; they were alſo called *Alexicaci*, from *αλεξω*, *I drive away*; and *Averrunci* from *averrunco*, which denotes the ſame.

APOZEM, in *Medicine*, the ſame with decoction. See DECOCTION.

APPARATUS, a term uſed to denote a complete ſet of inſtruments, or other utenſils, belonging to any artiſt or machine.

APPARATUS is frequently uſed for the operation of cutting for the ſtone. For this there are three ſorts of apparatus, viz. the ſmall, great, and high apparatus. See SURGERY.

APPARATUS is alſo uſed as a title of ſeveral books compoſed in form of catalogues, bibliothecas, dictionaries, &c. for the eaſe and conveniency of ſtudy. The apparatus to Cicero is a kind of concordance, or collection of Ciceronian phraſes, &c. The *apparatus ſacer* of Pelevin, is a collection of all kinds of eccleſiaſtical authors printed in 1611, in three volumes.—Gloſſaries, comments, &c. are alſo frequently called *apparatuſes*.

APPARENT, in a general ſenſe, ſomething that is viſible to the eyes, or obvious to the underſtanding.

APPARENT, among mathematicians and aſtronomers, denotes things as they appear to us, in contradiſtinction from real or true; thus we ſay, the apparent diameter, diſtance, magnitude, place, figure, &c. of bodies.

APPARENT Heir, in *Law*. No inheritance can veſt, nor can any perſon be the actual complete heir of another, till the anceſtor is previouſly dead. *Nemo eſt hæres viventis*. Before that time the perſon who is next in the line of ſucceſſion is called an *heir apparent*, or *heir preſumptive*. Heirs *apparent* are ſuch, whoſe right of inheritance is indefeaſible, provided they outlive the anceſtor; as the eldeſt ſon or his iſſue, who muſt by the courſe of the common law be heirs to the father whenever he happens to die. Heirs *preſumptive* are ſuch, who, if the anceſtor ſhould die immediately, would in the preſent circumſtances of things be his heirs: but whoſe right of inheritance may be defeated by the contingency of ſome nearer heir being born; as a brother, or nephew, whoſe preſumptive ſucceſſion may be deſtroyed by the birth of a child; or daughter, whoſe preſent hopes may be hereafter cut off by the birth of a ſon. Nay, even if the eſtate hath deſcended, by the death of the owner, to ſuch brother, or nephew, or daughter, in the former caſes, the eſtate ſhall be diveſted, and taken away by the birth of a poſthumous child; and, in the latter, it ſhall alſo be totally diveſted by the birth of a poſthumous ſon.

APPARITION, in a general ſenſe, denotes ſimply the appearance of a thing. In a more limited ſenſe, it is uſed for a ſpectre or ghoſt. Several inſtances of apparitions occur in the Bible; that of Samuel, raiſed by the witch of Endor, has occaſioned great diſputes. We find great controverſies among authors, in relation to the reality, the exiſtence or non-exiſtence, the poſſibility or impoſſibility, of apparitions. The Chaldeans, the Jews, and other nations, have been the ſteady aſſertors of the belief of apparitions. The denial of ſpirits and apparitions is by ſome made one of the marks of infidelity, if not of atheiſm. Many of the apparitions we are told of in writers, are doubtleſs mere deluſions of the ſenſe; many others are fictitious, contrived merely to amuſe, or anſwer ſome purpoſe. Apparitions, it is certain, are machines that on occaſion have been of good ſervice both to generals, to miniſters of ſtate, to prieſts, and others.

Partial darkneſs, or obſcurity, are the moſt powerful means by which the ſight is deceived: night is therefore the proper ſeaſon for apparitions. Indeed the ſtate of the mind, at that time, prepares it for the admiſſion of theſe deluſions of the imagination. The fear and caution which muſt be obſerved in the night; the opportunity it affords for ambuſcades and aſſaſſinations; depriving us of ſociety, and cutting off many pleaſing trains of ideas, which objects in the light never fail to introduce, are all circumſtances of terror: and perhaps, on the whole, ſo much of our happineſs depends upon our ſenſes, that the deprivation of any one may be attended with proportionable horror and uneaſineſs. The notions entertained by the ancients reſpecting the ſoul, may receive ſome illuſtration from theſe principles. In dark or twilight, the imagination frequently transforms

Apparitor || Appeal.

an inanimate body into a human figure; on approaching, the ſame appearance is not to be found: hence they ſometimes fancied they ſaw their anceſtors; but not finding the reality, diſtinguiſhed theſe illuſions by the name of *ſhades*.

Many of theſe fabulous narrations might originate from dreams. There are times of ſlumber when we are not ſenſible of being aſleep. On this principle, Hobbes has ingeniouſly accounted for the ſpectre which is ſaid to have appeared to Brutus. "We read," ſays he, "of M. Brutus, that at Philippi, the night before he gave battle to Auguſtus Cæſar, he ſaw a fearful apparition, which is commonly related by hiſtorians as a viſion; but, conſidering the circumſtances, one may eaſily judge it to have been but a ſhort dream. For ſitting in his tent, penſive, and troubled with the horror of his raſh act, it was not hard for him, ſlumbering in the cold, to dream of that which moſt affrighted him; which fear, as by degrees it made him wake, ſo it muſt needs make the apparition by degrees to vaniſh: and having no aſſurance that he ſlept, he could have no cauſe to think it a dream, or any thing but a viſion."—The well known ſtory told by Clarendon, of the apparition of the duke of Buckingham's father, will admit of a ſimilar ſolution. There was no man in the kingdom ſo much the ſubject of converſation as the duke; and from the corruptneſs of his character, he was very likely to fall a ſacrifice to the enthuſiaſm of the times. Sir George Villiers is ſaid to have appeared to the man at midnight: therefore there is the greateſt probability that the man was aſleep; and the dream affrighting him, made a ſtrong impreſſion, and was likely to be repeated.

APPARITOR, among the Romans, a general term to comprehend all attendants of judges and magiſtrates appointed to receive and execute their orders. *Apparitor*, in England, is a meſſenger that ſerves the proceſs of a ſpiritual court, or a beadle in a univerſity who carries the mace.

APAUMEE, in *Heraldry*, denotes one hand extended, with the full palm appearing, and the thumb and fingers at full length.

APPEAL, in *Law*, the removal of a cauſe from an inferior to a ſuperior court or judge, when a perſon thinks himſelf aggrieved by the ſentence of the inferior judge. Appeals lie from all the ordinary courts of juſtice to the houſe of lords. In eccleſiaſtical caſes, if an appeal is brought before a biſhop, it may be removed to the archbiſhop; if before an archdeacon, to the court of arches, and thence to the archbiſhop; and from the archbiſhop's court to the king in chancery.

Appeal, in *Common Law*, denotes an accuſation by a private ſubject againſt another for ſome heinous crime; demanding puniſhment on account of the particular injury ſuffered, rather than for the offence againſt the public.

This private proceſs, for the puniſhment of public crimes, had probably its original in thoſe times, when a private pecuniary ſatisfaction, called a *weregild*, was conſtantly paid to the party injured, or his relations, to expiate enormous offences. This was a cuſtom derived to the Engliſh, in common with other northern nations, from their anceſtors the ancient Germans; among whom, according to Tacitus, *luitur homicidium certo armentorum ac pecorum numero; recipitque ſatisfactionem univerſa domus.* In the ſame manner, by the Iriſh Brehon law, in caſe of murder, the brehon or judge was uſed to compound between the murderer and the friends of the deceaſed who proſecuted him, by cauſing the malefactor to give unto them, or to the child or wife of him that was ſlain, a recompenſe which they called an *eriach.* And thus we find in the Anglo-Saxon laws (particularly thoſe of King Athelſtan) the ſeveral weregilds for homicide eſtabliſhed in progreſſive order, from the death of the ceorl or peaſant, up to that of the king himſelf. And in the laws of Henry I. we have an account of what other offences were redeemable by weregild, and what were not ſo. As, therefore, during the continuance of this cuſtom, a proceſs was certainly given for recovering the weregild by the party to whom it was due; it ſeems that, when theſe offences by degrees grew no longer redeemable, the private proceſs was ſtill continued, in order to enſure the infliction of puniſhment upon the offender, though the party injured was allowed no pecuniary compenſation for the offence. Appeal.

But though appeals were thus, in the nature of proſecutions for ſome atrocious injury, committed more immediately againſt an individual, yet it alſo was anciently permitted, that any ſubject might appeal another ſubject of high treaſon, either in the courts of common law, or in parliament, or (for treaſons committed beyond the ſeas) in the court of the high conſtable and marſhal. The cognizance of appeals in the latter ſtill continues in force; and ſo late as 1631, there was a trial by battle awarded in the court of chivalry, on ſuch an appeal of treaſon: but that in the firſt was *virtually* aboliſhed by the ſtatutes 5 Edw. III. c. 9. and 2 Edw. III. c. 24. and in the ſecond *expreſsly* by ſtatute 1 Hen. IV. c. 14. So that the only appeals now in force for things done within the realm, are appeals of felony and mayhem.

An appeal of felony may be brought for crimes committed either againſt the parties themſelves or their relations. The crimes againſt the parties themſelves are *larceny*, *rape*, and *arſon*. And for theſe, as well as for mayhem, the perſons robbed, ravithed, maimed, or whoſe houſes are burnt, may inſtitute this private proceſs. The only crime againſt one's relation, for which an appeal can be brought, is that of *killing* him, by either murder or manſlaughter. But this cannot be brought by every relation; but only by the wife for the death of her huſband, or by the heir male for the death of his anceſtor; which heirſhip was alſo confined by an ordinance of Henry I. to the four neareſt degrees of blood. It is given to the wife on account of the loſs of her huſband; therefore, if ſhe marries again, before or pending her appeal, it is loſt and gone; or, if ſhe marries after judgment, ſhe ſhall not demand execution. The heir, as was ſaid, muſt alſo be heir male, and ſuch a one as was the next heir by the courſe of the common law at the time of the killing of the anceſtor. But this rule has three exceptions: 1. If the perſon killed leaves an innocent wife, ſhe only, and not the heir, ſhall have the appeal. 2. If there be no wife, and the heir be accuſed of the murder, the perſon, who next to him would have been heir male, ſhall bring the appeal. 3. If the wife kills her huſband, the heir may appeal her of the death. And, by the ſtatute of Glouceſter,

Appeal. ceſter, 6 Edw. I. c. 9. all appeals of death muſt be ſued within a year and a day after the completion of the felony by the death of the party: which ſeems to be only declaratory of the old common law; for in the Gothic conſtitutions we find the ſame "*præſcriptio annalis, quæ currit adverſus actorem, ſi de homicida ei non conſtat intra annum à cæde facta, nec quenquam interea arguat et accuſet.*

Theſe appeals may be brought previous to any indictment; and, if the appellee be acquitted thereon, he cannot afterwards be indicted for the ſame offence. In like manner as by the old Gothic conſtitution, if any offender gained a verdict in his favour, when proſecuted by the party injured, he was alſo underſtood to be acquitted of any crown proſecution for the ſame offence: but, on the contrary, if he made his peace with the king, ſtill he might be proſecuted at the ſuit of the party. And ſo, in England, if a man be acquitted on an indictment of murder, or found guilty, and pardoned by the king, ſtill he ought not (in ſtrictneſs) to go at large, but be impriſoned or let to bail till the year and day be paſt, by virtue of the ſtatute 3 Hen. VIII. c. 1. in order to be forthcoming to anſwer any appeal for the ſame felony, not having as yet been puniſhed for it: though, if he hath been found guilty of manſlaughter on an indictment, and hath had the benefit of clergy, and ſuffered the judgment of the law, he cannot afterwards be appealed; for it is a maxim in law, "that *nemo bis punitur pro eodem delicto.*" Before this ſtatute was made it was not uſual to indict a man for homicide within the time limited for appeals; which produced very great inconvenience.

If the appellee be acquitted, the appellor (by virtue of the ſtatute of Weſtm. 2. 13 Edw. I. c. 12.) ſhall ſuffer one year's impriſonment, and pay a fine to the king, beſides reſtitution of damages to the party for the impriſonment and infamy which he has ſuſtained: and, if the appellor be incapable to make reſtitution, his abettors ſhall do it for him, and alſo be liable to impriſonment. This proviſion, as was foreſeen by the author of Fleta, proved a great diſcouragement to appeals; ſo that thenceforward they ceaſed to be in common uſe.

If the appellee be found guilty, he ſhall ſuffer the ſame judgment, as if he had been convicted by indictment: but with this remarkable difference, that on an indictment, which is at the ſuit of the king, the king may pardon and remit the execution; on an appeal which is at the ſuit of a private ſubject, to make an atonement for the private wrong, the king can no more pardon it, than he can remit the damages required on an action of battery. In like manner as, while the weregild continued to be paid as a fine for homicide, it could not be remitted by the king's authority. And the ancient uſage was, (ſo late as Henry IV's time, that all the relations of the ſlain ſhould drag the appellee to the place of execution: a cuſtom, founded upon that ſavage ſpirit of family reſentment which prevailed univerſally through Europe after the irruption of the northern nations, and is peculiarly attended to in their ſeveral codes of law; and which prevails even now among the wild and untutored inhabitants of America: as if the finger of nature had pointed it out to mankind, in their rude and uncultivated ſtate. However, the puniſhment of the offender may be remitted and diſcharged by the concurrence of all parties intereſted; and as the king by his pardon may extinguiſh an indictment, ſo the appellant by his releaſe may diſcharge an appeal: "*nam qui ſolus poteſt revocare poterit pro ſe introducta.*"

Appeal. II Appellation.

APPEARANCE, in a general ſenſe, the exterior ſurface of a thing, or that which immediately ſtrikes the ſenſes.

APPEARANCE, in *Law*, ſignifies a defendant's filing a common or ſpecial bail, on any proceſs iſſued out of a court of judicature.

APPELLANT, in a general ſenſe, one who appeals. See APPEAL.

APPELLANTS, in church hiſtory, an appellation given to ſuch of the catholic clergy as appeal from the conſtitution unigenitus to a general council.

APPELLATION, the name by which any thing is known or diſtinguiſhed when ſpoken of. See NAME.

Nothing can be more foreign to the original meaning of many words and proper names, than their preſent appellations, frequently owing to the hiſtory of thoſe things being forgotten, or an ignorance of the language in which they were expreſſed. Who, for example, when the crier of a court bawls out, "O yes, O yes," would dream that it was a proclamation commanding the talkers to become hearers, being the French word *Oyez*, "liſten," retained in our courts ever ſince the law pleadings were held in French? Or would any perſon ſuppoſe that the headland on the French coaſt, near Calais, called by our ſeamen Blackneſs, would be ſo titled from its French name of *Blanc Nez*, or, the *White Headland*.

King Henry the Eighth having taken the town of Boulogne in France, the gates of which he brought to Hardes in Kent, where they are ſtill remaining, the flatterers of that reign highly magnified this action, which, Porto Bello like, became a popular ſubject for ſigns; and the port or harbour of Boulogne, called *Boulogne Mouth*, was accordingly ſet up at a noted inn in Holburn; the name of the inn long outliving the ſign and fame of the conqueſt, an ignorant painter employed by a no leſs ignorant landlord, to paint a new one, repreſented it by a bull and a large gaping human mouth (anſwering to the vulgar pronunciation of *Bull and Mouth*). The ſame piece of hiſtory gave being to the *bull and gate*, originally meant for Boulogne gate, and repreſented by an embattled gate or entrance into a fortified town.

The *barber's pole* has been the ſubject of many conjectures; ſome conceiving it to have originated from the word *poll*, or head, with ſeveral other conceits as far-fetched and as unmeaning: but the true intention of that party-coloured ſtaff was to ſhow that the maſter of the ſhop practiſed ſurgery, and could breathe a vein as well as mow a beard; ſuch a ſtaff being to this day, by every village practitioner, put into the hand of a patient undergoing the operation of phlebotomy. The white band which encompaſſes the ſtaff, was meant to repreſent the fillet, thus elegantly twined about it.

Nor were the *chequers*, (at this time a common ſign of a public houſe) leſs expreſſive, being the repreſentation of a kind of draught-board called *tables*, and ſhowed that there that game might be played. From their colour, which was red, and the ſimilarity to a lattice

Appellative ‖ Appetite.

it was corruptly called the *red lettuce*, which word is frequently uſed by ancient writers to ſignify an alehouſe.

The Spectator has explained the ſign of the *bell ſavage inn* plauſibly enough, in ſuppoſing it to have been originally the figure of a beautiful female found in the woods, called in French *la belle ſauvage*. But another reaſon has ſince been aſſigned for that appellation, namely, that the inn was once the property of Lady Arabella Savage, and familiarly called *Bell Savage's Inn*, probably repreſented, as at preſent, by a bell and a ſavage or wild man, which was a rebus for her name; rebuſſes being much in faſhion in the 16th century; of which the bolt and tun is an inſtance.

The three blue balls prefixed to the doors and windows of pawnbrokers ſhops, by the vulgar humorouſly enough ſaid to indicate that it is two to one that the things pledged are never redeemed, was in reality the arms of a ſet of merchants from Lombardy, who were the firſt that publicly lent money on pledges. They dwelt together in a ſtreet, from them named Lombard Street, in London, and alſo gave their name to another at Paris. The appellation of Lombard was formerly all over Europe conſidered as ſynonymous with that of uſurer.

At the inſtitution of yeomen of the guards, they uſed to wait at table on all great ſolemnities, and were ranged near the buffets; this procured them the name of *buffetiers*, not very unlike in ſound to the jocular appellation of *beef-eaters*, now given them; though probably it was rather the voluntary miſnomer of ſome wicked wit, than an accidental corruption ariſing from ignorance of the French language.

The opprobrious title of *bum bayliffe*, ſo conſtantly beſtowed on the ſheriff's officers, is, according to Judge Blackſtone, only the corruption of *bound bayliffe*, every ſheriff's officer being obliged to enter into bonds and to give ſecurity for his good behaviour, previous to his appointment.

A *cordwainer* ſeems to have no relation to the occupation it is meant to expreſs, which is that of a ſhoemaker. But *cordonier*, originally ſpelt *cordaunier*, is the French word for that trade; the beſt leather uſed for ſhoes coming originally from Cordova in Spain. Spaniſh-leather ſhoes were once famous in England.

APPELLATIVE NAMES, in *Grammar*, in contradiſtinction to proper names, are ſuch as ſtand for univerſal ideas, or a whole rank of beings, whether general or ſpecial. Thus *fiſh*, *bird*, *man*, *city*, *river*, are common or appellative names; and ſo are *trout*, *eel*, *lobſter*; for they all agree to many individuals, and ſome to many ſpecies. See NAME.

APPELLEE, among lawyers, the perſon againſt whom an appeal is brought. See APPEAL.

APPENDIX, in literature, a treatiſe or ſupplement added at the end of a work, to render it more complete.

APPERCEPTION, or ADPERCEPTION, a term uſed by Leibnitz and his followers for conſciouſneſs.

APPETITE, in a general ſenſe, the deſire of enjoying ſome object, ſuppoſed to be conducive to our happineſs. When this inclination is guided by reaſon, and proportioned to the intrinſic value of the object, it is called *rational appetite*; as, on the other hand, it is denominated *ſenſitive appetite*, when we have only a blind propenſity to a thing, without determinate ideas of the good qualities for which we deſire it. Appetite ‖ Applauſe

Appetites are paſſions directed to general objects, in contradiſtinction to paſſions directed to particular objects, which retain their proper name. Thus we ſay, an *appetite* for fame, for glory, for conqueſt, for riches; but we ſay the *paſſion* of love, of gratitude, of envy, &c. Appetite may be alſo diſtinguiſhed from paſſion, ſince the latter has no exiſtence till a proper object be preſented; whereas the former exiſts firſt, and then is directed to an object.

APPETITE, in *Medicine*, a certain painful or uneaſy ſenſation, always accompanied with a deſire to eat or drink.—An exceſſive appetite is called by phyſicians *bulimy* or *fames canina*; a defect or loſs of it, *anorexy*; and that after things improper for food, *pica*.

APPIA VIA, a way reaching from Rome through Capua to Brunduſium, between 330 and 350 miles long. Appius Claudius, ſurnamed *Cæcus*, in the year of the city 441, carried it from the Porta Capena to Capua (Livy, Frontinus). It was afterwards carried on to Brunduſium; but by whom, or when, is uncertain. It was laid with very hard ſtone, brought from a great diſtance, large and ſquared (Diodorus); and it was ſo wide, that ſeveral waggons could go abreaſt. Statius calls it *the queen of roads*. Its courſe is deſcribed by Horace, Strabo, and Antonine.

APPIAN, an eminent writer of the Roman hiſtory in Greek, under the reign of Trajan and Hadrian. He was of a good family in Alexandria in Egypt; whence he went to Rome, and there diſtinguiſhed himſelf ſo well as an advocate, that he was choſen one of the procurators of the empire, and the government of a province was committed to him. He did not complete the Roman hiſtory in a continued ſeries; but wrote diſtinct hiſtories of all nations that had been conquered by the Romans, in which he placed every thing relating to thoſe nations in the proper order of time. His ſtyle is plain and ſimple: in the opinion of Photius, he has ſhown the greateſt knowledge of military affairs, and the happieſt talent at deſcribing them, of any of the hiſtorians; for while we read him, we in a manner ſee the battles which he deſcribes. Of all this voluminous work there remains only what treats of the Punic, Syrian, Parthian, Mithridatic, and Spaniſh wars, with thoſe againſt Hannibal, the civil wars, and the wars in Illyricum, and ſome fragments of the Celtic or Gallic wars.

APPIUS CLAUDIUS, a Sabine by birth, one of the principal inhabitants of Regillum: His ſhining merit having drawn the envy of his fellow citizens upon him, he retired to Rome with all his family. Appius was admitted into the ſenate, and was made conſul with Publius Servilius Priſcus, in 258 from the building of Rome; but he was hated by the plebeians, being an auſtere oppoſer of their clamours and ſeditions. The Claudian family continued long one of the moſt illuſtrious of the patrician families in Rome; and ſeveral in ſucceſſion of the name of Appius ſupported the ſame ſtern character that diſtinguiſhed their firſt founder.

APPLAUSE, an approbation of ſomething, ſignified by clapping the hands, ſtill practiſed in theatres.—Applauſe, in antiquity, differed from ACCLAMATION, as the latter was articulate and performed with the voice, the former with the hands. Among the Romans,

Apple ‖ Appointee.

mans, applauſe was an artificial muſical kind of noiſe, made by the audience or ſpectators to expreſs their ſatisfaction. There were three ſpecies of applauſe, denominated from the different noiſes made in them, viz. *Bombus*, *Imbrices*, and *Teſſæ*; the firſt a confuſed din, made either by the hands or the mouth; the ſecond and third, by beating on a ſort of ſounding veſſ is placed in the theatres for this purpoſe. Perſons were inſtructed to give applauſe with ſkill; and there were even maſters who profeſſed to teach the art. The proficients in this way let themſelves out for hire to the vain-glorious among the poets, actors, &c. and were properly diſpoſed to ſupport a loud applauſe. Theſe they called *Laudicæni*, and Σοφοκλεῖς. At the end of the play, a loud peal of applauſe was expected, and even aſked of the audience, either by the chorus or the perſons who ſpoke laſt. The formula was, *Spectatores plaudite*, or *Valete et plaudite*. The plaudores, or applauders, were divided into chori, and diſpoſed in theatres oppoſite to each other, like the choriſters in cathedrals, ſo that there was a kind of concert of applauſes.

APPLE, the fruit of the pyrus malus. See Pyrus, Botany *Index*.

Apple of the eye, a name not unfrequently given to the pupil. See Anatomy.

Apples of Love. See Lycopersicon, Botany *Index*.

Mad Apples. See Melongena, Botany *Index*.

APPLEBY, the county town of Weſtmorland, where the aſſizes are held, is ſeated on the banks of the river Eden, which almoſt ſurrounds it. It was formerly a very conſiderable town, and had great privileges; but it is long ago gone to decay, and now only conſiſts of mean houſes in one broad ſtreet, which runs with an eaſy aſcent from north to ſouth; at the head of which is the caſtle, almoſt entirely ſurrounded by the river. It has two churches; a town hall, in which the aſſizes are held; a county jail; and an hoſpital for a governeſs and twelve widows, founded in 1651 by a daughter of Lord Clifford. It is governed by a mayor, twelve aldermen, a common council, and two ſerjeants at mace, &c. Here is ſaid to be the beſt corn market in theſe northern parts. It ſends two members to parliament. W. Long. 3. 52. N. Lat. 54. 35.

APPLICATION, in a general ſenſe, is the laying two things together, in order to diſcover their agreement or diſagreement.

Application, in *Geometry*, is uſed either for diviſion, for applying one quantity to another, whoſe areas, but not figure, ſhall be the ſame; or, for tranſferring a given line into a circle, or other figure, ſo that its ends ſhall be in the perimeter of the figure.

Application, in *Theology*, is particularly uſed, by ſome divines, for the act whereby our Saviour tranſfers, or makes over to us, what he had earned or purchaſed by his holy life and death. Accordingly it is by this application of the merits of Chriſt that we are to be juſtified and entitled to grace and glory. The ſacraments are the ordinary means or inſtruments whereby this application is effected.

APOGGIATURA, in *Muſic*, a ſmall note inſerted by the practical muſician, between two others, at ſome diſtance.

APPOINTEE, a foot ſoldier in the French army before the revolution, &c. who for long ſervice and [illegible] very received pay above private centinels. They were ſuppreſſed in France, except in the regiment of Swiſs guards, where forty appointees were retained to each company of 150 men. Appointee ‖ Appointment.

Till the year 1670, they had alſo captains and lieutenants under the appellation of *appointees*, who, without reſiding in the regiment, received their pay.

Appointee, in *Heraldry*, the ſame as *aguiſée*: Thus we ſay, a croſs appointée, to ſignify that with two angles [illegible] end cut off, ſo as to terminate in a point.

APPOINTMENT, in a general ſenſe, the [illegible] Assignation.

Appointment, in a particular ſenſe, denotes a penſion or ſalary given by great lords and princes to perſons of worth and parts, in order to retain them in their ſervice. The term is chiefly uſed among the French. The king of France gave large appointments to ſeveral of the officers in his ſervice. Appointments differ from wages, in that the latter are fixed and ordinary, being paid by the ordinary treaſurers; whereas appointments are annual gratifications granted by *brevet* for a time uncertain, and are paid out of the privy purſe.

APPOSER ſignifies an examiner. In the court of exchequer, there is an office called the *foreign apposer*. In the office of confirmation, in the firſt liturgy of Edward VI. the rubric directs the biſhop, or ſuch as he ſhall appoint, to appoſe a child; and a biſhop's examining chaplain was anciently called his *poſer*.

APPOSITION, in *Grammar*, the placing two or more ſubſtantives together, in the ſame caſe, without any copulative conjunction between them; as *Ardebat Alexim, delicias domini*.

APPRAISER (from *ad*, "to," and *pretium*, "value"), one who rates or ſets a value upon goods, &c. He muſt be a ſkilful and honeſt perſon. It is not a buſineſs of itſelf, but is practiſed by brokers of houſehold furniture; to which ſet of men the word is chiefly applied: Yet upholſterers and other brokers are employed, or even any perſon or perſons who are ſuppoſed to be ſkilled in the commodities to be appraiſed or valued. They are employed in caſes of death, executions brought in upon goods, or of ſtock to be turned over from one perſon to another, or divided between copartners; and are called *sworn appraiſers*, from their taking an oath to do juſtice between party and party. They ſometimes appraiſe on behalf of both ſides, each party agreeing to have the ſame appraiſer or appraiſers; ſometimes in oppoſition, each party chooſing one or more of a ſide; and ſometimes by commiſſion or deputation of truſtees, maſters in chancery, &c.

APPRAISING, the act of rating, valuing, or ſetting a price on goods, by a perſon who is a [illegible] judge, and is authorized thereto. See Appraiser.

APPREHENSION, in *Logic*, denotes the ſimple attention of the mind to an object preſented either to our ſenſe or our imagination, without paſſing a judgement or making any inference.

Apprehension, is likewiſe uſed to expreſs an inadequate and imperfect idea; and thus it is applied to our knowledge of God in contradiſtinction to comprehenſion.

Apprehension, in *Law*, ſignifies the ſeizing a criminal, in order to bring him to juſtice.

APPRENTICE

Apprentice, Apprenticeship.

APPRENTICE, (from *apprendre*, "to learn,") one who is bound by covenant to ſerve a tradeſman or artificer a certain time, upon condition of the maſter's inſtructing him in his art or myſtery.

Apprentices may likewiſe be bound to huſbandmen, or even to gentlemen; and they, as well as tradeſmen, in England, are compellable to take the children of the poor, whom the overſeers, with the conſent of two juſtices, may bind till the age of 24 years. Apprentices may be diſcharged on reaſonable cauſe; but if any, whoſe premium has been leſs than ten pounds, run away from their maſters, they are compellable to ſerve out the time of abſence, or give ſatisfaction for it, at any period within ſeven years after expiration of the original contract. Apprentices gain a ſettlement in that pariſh where they laſt ſerved 40 days; and by the 5th of Elizabeth, c. 4. they have an excluſive right to exerciſe the trade in which they have been inſtructed, in any part of England. However, the reſolutions of the courts have in general rather confined than extended the reſtriction of this ſtatute. See Blackſtone's Com. vol. i. p. 426, &c.

In France, the ſons of tradeſmen, living in their father's houſe till ſeventeen years of age, are reputed to have ſerved an apprenticeſhip. In that country, the times of ſerving are different in the different profeſſions, from three years to eight. After ſerving out an apprenticeſhip, the perſon becomes what they call an *aſpirant*, or candidate for maſterſhip, and is to be examined by proper officers as to his ſkill and proficiency, and alſo to exhibit a *chef d'œuvre* or maſterpiece in the art he has been bred to, before he be ſuffered to ſet up to practiſe for himſelf. And the cuſtom of France in regard to apprentices, is not unworthy the imitation of other nations.

Anciently, benchers in the inns of court were called *apprentices of the law*, in Latin, *apprenticii juris nobiliores*: as appears by Mr Selden's note on Fortescue: and ſo the learned Plowden ſtyles himſelf. Sir Henry Finch, in his *Nomotechnia*, writes himſelf, *apprentice de ley*: Sir Edward Coke in his *Inſt.* ſays, *Apprenticii legis*, in pleading, are called *homines conſiliarii et in lege periti*; and in another place, *apprentices* and other counſellors of law.

Apprentices indentures and articles of clerkſhip, pay of duty 6s. Pariſh indentures are excepted, and pay 6d. only, by 5 William III. c. 21. For fees given with apprentices, clerks, or ſervants, bound or articled by indentures, from 1l. to 50l. maſters pay for every pound 6d.; and for fees above 50l. one ſhilling in the pound. 8. Ann. c. 9.

APPRENTICESHIP, the ſervitude of an apprentice, or the duration of his indenture.

Seven years ſeem anciently to have been, all over Europe, the uſual term eſtabliſhed for the duration of apprenticeſhips in the greater part of incorporated trades. All ſuch incorporations were anciently called *univerſities* which, indeed, is the proper Latin name for any incorporation whatever. The univerſity of ſmiths, the univerſity of taylors, &c. are expreſſions which we commonly meet with in the old charters of ancient towns. When thoſe particular incorporations which are now peculiarly called *univerſities* were firſt eſtabliſhed, the term of years which it was neceſſary to ſtudy, in order to obtain the degree of maſter of arts, appears evidently to have been copied from the term of apprenticeſhip in common trades, of which the incorporations were much more ancient. As to have wrought ſeven years under a maſter properly qualified was neceſſary in order to entitle any perſon to become a maſter, and to have himſelf apprentices in a common trade; ſo to have ſtudied ſeven years under a maſter properly qualified was neceſſary to entitle him to become a maſter, teacher or doctor (words anciently ſynonymous), in the liberal arts, and to have ſcholars or apprentices (words likewiſe originally ſynonymous) to ſtudy under him. Apprenticeſhip.

By the 5th of Elizabeth, commonly called the *ſtatute of apprenticeſhip*, it was enacted, that no perſon ſhould for the future exerciſe any trade, craft, or myſtery at that time exerciſed in England, unleſs he had previouſly ſerved to it an apprenticeſhip of ſeven years at leaſt; and what before had been the bye-law of many particular corporations, became in England the general and public law of all trades carried on in market towns. For though the words of the ſtatute are very general, and ſeem plainly to include the whole kingdom, by interpretation its operation has been limited to market towns; it having been held, that in country villages a perſon may exerciſe ſeveral different trades, though he has not ſerved a ſeven years apprenticeſhip to each, they being neceſſary for the conveniency of the inhabitants, and the number of people frequently not being ſufficient to ſupply each with a particular ſet of hands.

By a ſtrict interpretation of the words, too, the operation of this ſtatue has been limited to thoſe trades which were eſtabliſhed in England before the 5th of Elizabeth, and has never been extended to ſuch as have been introduced ſince that time. This limitation has given occaſion to ſeveral diſtinctions which, conſidered as rules of police, appear as fooliſh as can well be imagined. It has been adjudged, for example, that a coachmaker can neither himſelf make, nor employ journeymen to make, his coach wheels, but muſt buy them of a maſter wheelwright, this latter trade having been exerciſed in England before the 5th of Elizabeth. But a wheelwright, though he has never ſerved an apprenticeſhip to a coachmaker, may either himſelf make, or employ a journeyman to make, coaches; the trade of a coachmaker not being within the ſtatute, becauſe not exerciſed in England at the time when it was made. The manufacturers of Mancheſter, Birmingham, and Wolverhampton, are many of them upon this account not within this ſtatue; not having been exerciſed in England before the 5th of Elizabeth.

In France the duration of apprenticeſhips is different in different towns and in different trades. In Paris, five years is the term required in a great number; but before any perſon can be qualified to exerciſe the trade as a maſter, he muſt, in many of them, ſerve five years more as a journeyman. During this latter term he is called the *companion* of his maſter, and the term itſelf is called his *companionſhip*.

In Scotland there is no general law which regulates univerſally the duration of apprenticeſhips. The term is different in different corporations. Where it is long, a part of it may generally be redeemed by paying a ſmall fine. In moſt towns, too, a very ſmall fine is ſufficient to purchaſe the freedom of any corporation.

Apprenticeships, Apprifing.

The weavers of linen and hempen cloth, the principal manufactures of the country, as well as all other artificers ſubſervient to them, wheelmakers, reedmakers, &c. may exerciſe their trades in any town corporate without paying any fine. In all towns corporate, all perſons are free to ſell butcher's meat upon any lawful day of the week. Three years is in Scotland a common term of apprenticeſhip, even in ſome very nice trades: and in general there is no country in Europe in which corporation laws are ſo little oppreſſive.

Apprenticeſhips were altogether unknown to the ancients. The reciprocal duties of maſter and apprentice make a conſiderable article in every modern code. The Roman law is perfectly ſilent with regard to them. There is no Greek or Latin word which expreſſes the idea we now annex to the word apprentice; a ſervant bound to work at a particular trade for the benefit of a maſter during a term of years, upon condition that the maſter ſhall teach him that trade.

Wealth of Nations, vol. i. p. 190.

Long apprenticeſhips Dr Smith conſiders as altogether unneceſſary. The arts which are much ſuperior to common trades, ſuch as thoſe of making clocks and watches, contain no ſuch myſtery as to require a long courſe of inſtruction. The firſt invention of ſuch beautiful machines, indeed, and even that of ſome of the inſtruments employed in making them, muſt, no doubt, have been the work of deep thought and long time, and may juſtly be conſidered as among the happieſt efforts of human ingenuity: but when both have been fairly invented and are well underſtood; to explain to any young man, in the completeſt manner, how to apply the inſtruments, and how to conſtruct the machines, cannot well require more than the leſſons of a few weeks; perhaps thoſe of a few days might be ſufficient. In the common mechanic trades, thoſe of a few days might certainly be ſufficient. The dexterity of hand, indeed, even in common trades, cannot be acquired without much practice and experience. But a young man would practice with much more diligence and attention, if from the beginning he wrought as a journeyman, being paid in proportion to the little work which he could execute, and paying in his turn for the materials which he might ſometimes ſpoil through awkwardneſs and inexperience. His education in this way generally would be more effectual, and always leſs tedious and expenſive. The maſter, indeed, would be a loſer; he would loſe all the wages of the apprentice, which he now ſaves, for ſeven years together. In the end perhaps, the apprentice himſelf would be a loſer. In a trade ſo eaſily learnt he would have more competitors; and his wages when he came to be a complete workman, would be much leſs than at preſent. The ſame increaſe of competition would reduce the profits of the maſters as well as the wages of the workmen. The trades, the crafts, the myſteries, would all be loſers: but the public would be a gainer: the work of all artificers coming in this way much cheaper to market.

APPRISING, in *Scots Law*, the name of that action by which a creditor formerly carried off the eſtate of his debtor for payment. It is now aboliſhed, and adjudications are appointed in place of it. Adjudications, charter, reſignation, *clare conſtat*, cognition of heirs, heritable right, confirmation, novodamus, principal and original inſtrument of ſurrender, retour, ſeiſin, and ſervice in Scotland, pay by different acts 4s. 9d. duty.

APPROACH, or Approaching, in a general ſenſe, the acceding or coming together of two or more things.

APPROACHES, in *Fortification*, the works thrown up by the beſiegers, in order to get nearer a fortreſs, without being expoſed to the enemy's cannon.

APPROACHING, in fowling, a term uſed to expreſs ſuch devices as are contrived for the getting within ſhot of fly birds. It is principally uſed in marſhy low places. The beſt method of approaching is by means of three hoops tied together at proper diſtances according to the height of the man that is to uſe it, and having boughs of trees tied all round it, with cords to hang it over his ſhoulders; a man getting into this, conceals himſelf, and approaches by degrees towards his game in the form of a moving buſh. Geeſe, ducks, and teal, quit the waters in the evening, and paſs the night in the fields; but at the approach of morning they return to the water again, and even when on the water they will retire to great diſtances, on the approach even of a horſe or cow, ſo that the buſineſs of the ſtalking horſe is of little uſe; but this device of approaching by the moving buſh ſucceeds tolerably well with them.

Approaching, in gardening, the inoculating or ingrafting the ſprig of one tree into another, without cutting it off the parent tree.

APPROBATION, a ſtate or diſpoſition of the mind, wherein we put a value upon, or become pleaſed with, ſome perſon or thing. Moraliſts are divided on the principle of approbation, or the motive which determines us to approve and diſapprove. The Epicureans will have it to be only ſelf-intereſt: according to them, that which determines any agent to approve his own action, is its apparent tendency to his private happineſs; and even the approbation of another's action flows from no other cauſe but an opinion of its tendency to the happineſs of the approver, either immediately or remotely. Others reſolve approbation into a moral ſenſe, or a principle of benevolence by which we are determined to approve every kind affection either in ourſelves or others, and all publicly uſeful actions, which we imagine to flow from ſuch affection, without any view therein to our own private happineſs.

Approbation, is more particularly uſed, in ſpeaking of recommendations of books, given by perſons qualified or authorized to judge of them. Thoſe appointed to grant licenſes and imprimaturs, frequently expreſs their approbation of books. Books were formerly ſubjected to a licenſer in England, (ſee 13th Car. II. c. 33), which act is long ſince expired; and being incompatible with the noble principles of the Revolution, has never ſince been, and it is hoped never will be, revived.

APPROPRIATION, in the *Canon Law*, a ſevering of a benefice eccleſiaſtical to the proper and perpetual uſe of ſome religious houſe. See the article Parson.

The contrivance of appropriations ſeems to have ſprung from the policy of the monaſtic orders, who have never been deficient in ſubtle inventions for the increaſe of their own power and emoluments. At the firſt eſtabliſhment of parochial clergy, the tithes

Appropriation.

of the parish were distributed in a fourfold division; one for the use of the bishop, another for maintaining the fabric of the church, a third for the poor, and the fourth to provide for the incumbent. When the sees of the bishops became otherwise amply endowed, they were prohibited from demanding their usual share of these tithes, and the division was into three parts only. And hence it was inferred by the monasteries, that a small part was sufficient for the officiating priest; and that the remainder might well be applied to the use of their own fraternities (the endowment of which was construed to be a work of the most exalted piety), subject to the burden of repairing the church and providing for its constant supply. And therefore they begged and bought, for masses and obits, and sometimes even for money, all the advowsons within their reach, and then appropriated the benefices to the use of their own corporation. But, in order to complete such appropriation effectually, the king's license, and consent of the bishop, must first be obtained; because both the king and the bishop may some time or other have an interest, by lapse, in the presentation to the benefice; which can never happen if it be appropriated to the use of a corporation, which never dies: and also because the law reposes a confidence in them, that they will not consent to any thing that shall be to the prejudice of the church. The consent of the patron also is necessarily implied, because the appropriation can be originally made to none but to such spiritual corporation as is also the patron of the church; the whole being indeed nothing else but an allowance for the patrons to retain the tithes and glebe in their own hands, without presenting any clerk, they themselves undertaking to provide for the service of the church. When the appropriation is thus made, the appropriators and their successors are perpetual parsons of the church; and must sue and be sued, in all matters concerning the rights of the church by the name of *parsons*.

This appropriation may be severed, and the church become disappropriate, two ways; as, first, If the patron or appropriator presents a clerk, who is instituted and inducted to the parsonage: for the incumbent so instituted and inducted is to all intents and purposes complete parson; and the appropriation being once severed, can never be reunited again, unless by a repetition of the same solemnities. And, when the clerk so presented is distinct from the vicar, the rectory thus vested in him becomes what is called a *fine-cure*; because he hath no cure of souls, having a vicar under him to whom that cure is committed. Also, if the corporation which has the appropriation is dissolved, the parsonage becomes disappropriate at common law; because the perpetuity of person is gone, which is necessary to support the appropriation.

In this manner, and subject to these conditions, may appropriations be made at this day: and thus were most, if not all of the appropriations at present existing originally made; being annexed to bishoprics, prebends, religious houses, nay, even to nunneries, and certain military orders, all of which were spiritual corporations. At the dissolution of monasteries, by statutes 27 Hen. VIII. c. 28, and 31 Hen. VIII. c. 13. the appropriation of several parsonages, which belonged to those respective religious houses (amounting to more than one third of all the parishes in England), would have been by the rules of the common law disappropriated; had not a clause in those statutes intervened, to give them to the king in as ample a manner as the abbots, &c. formerly held the same at the time of their dissolution. This, though perhaps scarcely defensible, was not without example: for the same was done in former reigns, when the alien priories (that is, such as were filled by foreigners only) were dissolved and given to the crown. And from these two roots have sprung all the lay appropriations or secular parsonages which we now see in the kingdom; they having been afterwards granted out from time to time by the crown. See the article *Parson and Vicar*.

Approver || Appulse.

APPROVER, in *Law*, one who, confessing felony in himself, appealeth or impeacheth another or more of his accomplices. He is so called from the French *approuver*, *comprobare*, because he must prove what he hath alleged in his appeal. This proof was anciently either by battle, or by the country, at the choice of the appellee; and the form of this accusation may be found in Crompt. Just. 250.

Approvers of the king, are those who have the letting of the king's demesnes in small manors, &c. In the statute of the 1st of Ed. III. c. 8. sheriffs are called the king's *approvers*.

It being in the discretion of the court to suffer one to be an approver, this method of late hath seldom been practised. But we have, in cases of burglary and robbery on the highway, what seems to amount to the same by statute; it being ordained, that where persons charged with such crimes out of prison, discover two others concerned in the crime, they shall have a pardon, &c. Stat. 5th Anne, c. 31.

Approver is particularly used in ancient law writers, for a bailiff or land steward, appointed to have the care of a manor, franchise, or the like, and improve and make the most of it for the benefit of his master. In this sense, the word is also written *appruare*.

APPROXIMATION, in *Arithmetic* and *Algebra*, the coming nearer and nearer to a root, or other quantity sought, without expecting to be ever able to find it exactly.

APPUI, in the manege, (q. d. rest or stay upon the hand), is the reciprocal effort between the horse's mouth and the bridle-hand, or the sense of the action of the bridle on the hand of the horseman.

A just appui of the hand, is the nice bearing up or stay of the bridle, so that the horse, being awed by the sensibility and tenderness of his mouth, dares not rest too much upon the bitmouth, nor check or beat upon the hand to withstand it. A horse is said to have no appui, when he is too apprehensive of the hand, and cannot bear the bit. He is said to have too much appui, when he rests or throws himself too much upon the bit. Horses designed for the army ought to have a full appui upon the hand. To give a horse a good appui, he should be galloped, and put often back.

APPULSE, in *Astronomy*, the approach of any planet, to a conjunction with the sun, or a star. It is a step towards a transit, occultation, conjunction, eclipse, &c. Mr Flamsted, M. de la Hire, and others, have given observations of the moon's appulses to the Pleiades. *Phil. Transf.* N° 76. p. 361. *M. Acad. Science, an.* 1708.

APRICOT,

Apricot || Apta.

APRICOT, in *Botany*. See PRUNUS.

APRIES, ſon of Pſammis, king of Egypt; the ſame with Pharaoh Hophrah in Jeremiah and Ezekiel. He ruined Sidon, and ſome ſay he put Jeremiah to death. He thought neither God nor man could dethrone him; which yet was eaſily done by Amaſis, and he himſelf was ſtrangled by the Egyptians.

APRIL, the fourth month of the year, according to the common computation; but the ſecond, according to that of the aſtronomers. It contains 30 days.—The word is derived from *aprilis*, of *aperio*, "I open;" becauſe the earth, in this month, begins to open her boſom for the production of vegetables. In this month the ſun travels through the ſign of Taurus.

A PRIORI, a kind of demonſtration. See DEMONSTRATION.

APRON, in *Naval Architecture*, is a piece of curved timber fixed behind the lower part of the ſtern, immediately above the foremoſt end of the keel.

APRON is alſo a name given to a platform or flooring of plank, raiſed at the entrance of a dock, againſt which the dock gates are ſhut.

APRON, in *Gunnery*, a piece of lead which caps or covers the vent or touch-hole of a great gun.

APSIS or ABSIS, ſignifies the bowed or arched roof of a houſe, room, or oven, &c. as alſo the ring or compaſs of a wheel.

APSIS, in eccleſiaſtical writers, denotes an inner part in the ancient churches, wherein the clergy ſat, and where the altar was placed. It is ſuppoſed to have been thus called, becauſe covered with an arch or vault of its own, by the Greeks called ἁψις, by the Latins *abſis*. Apſis, in this ſenſe, amounts to the ſame with what is otherwiſe called *choir*, *concha*, *camera*, and *preſbyterium*; and ſtands oppoſed to the *nave* or body of the church.

APSIS is more particularly uſed for the biſhop's ſeat, or throne, in ancient churches. This was peculiarly called *apſis gradata*, becauſe raiſed on ſteps above the ordinary ſtalls. It was alſo denominated *exedra*, and in latter times *tribune*.

APSIS is alſo uſed for a reliquary, or caſe, wherein the relicks of ſaints were anciently kept. It took the name *apſis*, from its being round or arched at the top: or perhaps from the place where it was kept. The *apſis* was commonly placed on the altar: it was uſually of wood, ſometimes alſo of gold and ſilver, with ſculptures, &c.

APSIS, in *Aſtronomy*, a term uſed indifferently for either of the two points of a planet's orbit, where it is at greateſt or leaſt diſtance from the ſun or earth; and hence the line connecting thoſe points is called the line of the *apſides*. The word is Greek, and derived from ἅπτω, *to connect*. The apſis, at the greateſt diſtance from the ſun, is called the *aphelion*, and at the greateſt diſtance from the earth the *apogee*; while that at the leaſt diſtance from the ſun is termed the *perihelion*, and at the leaſt diſtance from the earth the *perigee*.

APSIRTIDES. See ABSORUS.

APTA, or APTA JULIA. (Pliny); now *Apte*, in Provence, on the river Calavon, ſeven leagues to the north of Aix, and nine to the north of Avignon. In the Notitiæ it is called *Civitas Aptenſium*: Pliny reckons it among the Latin towns. That it was a colony, appears from an inſcription on a ſtone found at Arles, (Simond). E. Long. 5. 5. N. Lat. 43 [illegible].

APTERA, (Strabo, Stephanus); APTERUS, (Pliny); APTERIA, (Ptolemy): A [illegible] whoſe port was Cydonia, on the weſt [illegible] (Strabo); 12 miles to the ſouth of Cydonia [illegible] the Montes Leuci, and as many from the [illegible] Amphimales. So called from the Sirens, [illegible] vanquiſhed in long by the Muſes, ſtript them [illegible] their wings, and out of grief leaped into the [illegible] (Stephanus). There was a town at Lycia of the ſame name. E. Long. 25. N. Lat. 35. 50.

APTERA, a term uſed by Linnæus for his ſeventh order of inſects, comprehending ſuch as have no wings.

APTHANE, a title anciently given to the higher degrees of nobility in Scotland. See THANE.

APTITUDE, (from *aptus*, "fit"), the natural diſpoſition any thing hath to ſerve for ſuch or ſuch a purpoſe.—Thus, oil hath an *aptitude* to burn, and water to extinguiſh fire.

APTITUDE, or APTNESS, is often uſed, in ſpeaking of the talents of the mind, for a promptitude, or diſpoſition to learn things with eaſe and expedition: in which ſenſe *aptneſs* amounts to the ſame with what the Greeks call εὐφυΐα, *bona indoles*, and we ſometimes docility. Charlton divides *aptneſs* into three parts, viz. *acuteneſs*, *ſagacity*, and *memory*.

APTOTE, among grammarians, an indeclinable noun, or one which has no variation of caſes.

APULEIUS LUCIUS, a Platonic philoſopher, univerſally known by his performance of the Golden Aſs. He lived in the ſecond century, under the Antonines; and was born at Madura, a Roman colony in Africa. He ſtudied firſt at Carthage, then at Athens, and afterwards at Rome, where he learned the Latin tongue without the help of a maſter. He was a man of a curious and inquiſitive diſpoſition, eſpecially in religious matters: this prompted him to take ſeveral journeys, and to enter into ſeveral ſocieties of religion. He ſpent his whole fortune almoſt in travelling; ſo that, at his return to Rome, when he was about to dedicate himſelf to the ſervice of Oſiris, he had not money enough to defray the expence attending the ceremonies of the reception, and was obliged to pawn his clothes to raiſe the neceſſary ſum. He ſupported himſelf afterwards by pleading cauſes: and as he was a great maſter of eloquence, and of a ſubtle genius, many conſiderable cauſes were truſted to him. But he avail'd himſelf more by a good marriage than by his pleadings; a widow, named *Pudentilla*, who was neither young nor handſome, but wanted a huſband and was very rich, took a great fancy to him. This marriage drew upon him a troubleſome law ſuit. The lady's relations, pretending he made uſe of ſorcery to gain her heart and money, accuſed him of being a magician before Claudius Maximus proconſul of Africa. Apuleius was under no great difficulty of making his defence. As Pudentilla was determined, from conſiderations of health, to enter upon a ſecond marriage, even before ſhe had ſeen this pretended magician, the youth, deportment, pleaſing converſation, vivacity, and other agreeable qualities of Apuleius, were charms ſufficient to engage her heart. He had the moſt favourable opportunities too of gaining her friendſhip, for he lodged ſome time at her houſe: Pudentilla's eldeſt ſon having

Apuleius || Apus.

having a great friendſhip for him, was likewiſe deſirous of the match, and ſolicited him in favour of Pudentilla. "Do you make a wonder (ſaid Apuleius, in his defence) that a woman ſhould marry again, after having lived a widow 13 years? It is much more wonderful that ſhe did not marry again ſooner. You think that magic muſt have been employed to prevail with a widow of her age to marry a young man; on the contrary, this very circumſtance ſhows how little occaſion there was for magic." He offered to prove by his marriage contract, that he got nothing of Pudentilla but a promiſe of a very moderate ſum, in caſe he ſurvived her and had children by her. He was alſo obliged to make ſuch confeſſions in court as Pudentilla would gladly have excuſed. He ſaid ſhe was neither handſome nor young, nor ſuch as could any ways tempt him to have recourſe to enchantments: moreover, he added, that Pontianus her ſon propoſed the marrying his mother to him only as a burden, and the action of a friend and philoſopher. He alſo took notice of many inconveniences which attend the marrying of widows, and ſpoke highly of the advantages of a maid above a widow: A handſome virgin (ſaid he), let her be ever ſo poor, is abundantly portioned; ſhe brings to her huſband a heart quite new, together with the flower and firſt fruits of her beauty. It is with great reaſon that all huſbands ſet ſo great a value upon the flower of virginity: all the other goods which a woman brings her huſband are of ſuch a nature, that he may return them again, if he has a mind to be under no obligation to her: that alone cannot be reſtored, it remains in the poſſeſſion of the firſt huſband. If you marry a widow, and ſhe leaves you, ſhe carries away all that ſhe brought you." Upon which paſſage Mr Bayle makes a very coarſe remark, viz. "That this good which is never taken back out of the hands of a huſband, is very chimerical; and that there is never a baker nor a butcher, who would lend ſixpence upon this unperiſhable poſſeſſion." The apology is ſtill extant, and is reckoned a very fine piece. Apuleius was extremely indefatigable in his ſtudies: and compoſed ſeveral books, ſome in verſe, and others in proſe; but moſt of them have been loſt. He took great pleaſure in declaiming, and was heard generally with great applauſe: When he declaimed at Oeca, the audience cried out with one voice, that they ought to confer upon him the honour of citizen. The citizens of Carthage heard him with great ſatisfaction, and erected a ſtatue to him; and ſeveral other cities did him the ſame honour. Several critics have publiſhed notes on Apuleius's Golden Aſs, and there have been tranſlations of it into different languages.

APULIA, now PUGLIA, a territory of Italy, bordering on the Adriatic, and extending from the river Frento to Tarentum in length, and from the Adriatic to the Lucani in breadth. *Apuli* the people (Horace); divided into the *Apulia Daunia*, now called *Puglia Pinna* or the *Capitanata;* and into the *Apulia Peucetia*, now *Terra di Bari*, (Pliny, Ptolemy). Apulia abounded in ſheep, which yielded the fineſt wool (Martial). It is now the eaſt ſide of the kingdom of Naples.

APUS, *Avis Indica*, in *Aſtronomy*, a conſtellation of the ſouthern hemiſphere placed near the pole, between the triangulum auſtrale and the chameleon, ſuppoſed to repreſent the bird of paradiſe.

APYCNI SUONI, in *Muſic*, ſounds diſtant one or more octaves, and yet concord. Apycni || Aqua Vitæ.

APYCNOS, in *Muſic*, is ſaid of the diatonic genus, on account of its having ſpacious intervals, in compariſon of the chromatic and enharmonic.

APYREXY, among phyſicians, denotes the intermiſſion of a fever.

APYROUS, a word applied to denote that property of ſome bodies, by which they reſiſt the moſt violent fire without any ſenſible alteration. Apyrous bodies ought to be diſtinguiſhed from thoſe which are refractory. Refractory ſubſtances are thoſe which cannot by violent heat be fuſed, whatever other alteration they may ſuſtain. But a body, properly ſpeaking, apyrous, can neither be fuſed by heat, nor can undergo any other change. Diamonds were long thought to be poſſeſſed of this property. But ſome late experiments have ſhown, that diamonds may be entirely diſſipated or evaporated by heat, and are therefore not entitled to be ranked among apyrous ſubſtances. Perhaps there is no body in nature eſſentially and rigorouſly apyrous. But it is ſufficient that there be bodies apyrous relatively to the degree of fire which art can produce, to entitle them to that name.

AQUA, a term frequently met with in the writings of phyſicians, chemiſts, &c. for certain medicines, or menſtruums, in a liquid form, diſtinguiſhed from each other by peculiar epithets, as *Aqua Alexiteria*, *Aqua Aluminoſa*, *Aqua Mirabilis*, &c. for which ſee PHARMACY.

Aqua Extincta, or *Extinguiſhed Water*, is aquafortis into which ſome river water has been poured, in order to qualify it, and render it leſs corroſive. Its uſe is to get the ſilver from the aquafortis that ſerved to part gold from it.

Aqua Fortis, a name given by artiſts to nitric acid of a certain ſtrength, from its diſſolving power. See CHEMISTRY *Index*.

Aqua Marina, a name by which the jewellers call the beryl, on account of its ſea-green colour. See BERYL.

Aqua Regia, a compound of nitric and muriatic acid, in different proportions according to the purpoſe for which it is intended. It is uſually made by diſſolving in nitric acid, ſal ammoniac, or common ſalt, both which are combinations of muriatic acid with alkali. When made with ſal ammoniac, the common proportion is one part of this ſalt to four parts of nitric acid; but to diſſolve platina, equal parts are requiſite. A purer aqua regia may be made by ſimply mixing the two acids.

Aqua regia is particularly uſed as a menſtruum for gold; it likewiſe diſſolves all other metals, except ſilver. The gold diſſolved in aqua regia is, in fact, diſſolved in the oxygenated muriatic acid only, which gives out its oxygen to the gold, and then diſſolves the the oxide: for metals are not ſoluble in acids until they are oxidated. See CHEMISTRY *Index*.

Aqua Secunda, aquafortis diluted with much pure water. It is employed in ſeveral arts, to clear the ſurface of metals and certain ſtones, and for various other purpoſes.

Aqua Vitæ is commonly underſtood of what is otherwiſe called *brandy*, or ſpirit of wine, either ſimple, or prepared with aromatics. Some, however, diſtinguiſh

Aquæ Augustæ || Aquæ Pannoniæ.

distinguish between them; appropriating the term *brandy* to what is drawn from wine, or the grape; and *aqua vitæ* to that drawn after the same manner from malt, &c.

Aquæ Augustæ (Ptolemy); *Aquæ Tarbellicæ* (Antonine); *Aquensis Civitas*, in the Notitia. Now *Acqs*, or *Dax*, a town in Gascony, on the river Adour, famous for its baths. W. Long. 1. 40. N. Lat. 43. 56.

Aquæ Bilbilitanæ, (Antonine): baths 24 miles to the west of Bilbilis. Now *Banos de Albama*, in Aragon.

Aquæ Calidæ, (Ptolemy); *Aquæ Solis*, (Antonine); a place of the Belgæ in Britain, famous for its hot waters. Now Bath in Somersetshire. W. Long. 1. 5. Lat. 51. 20.

Aquæ Calidæ, (Ptolemy); *Aquicaldenses*, (Pliny); formerly in great repute, and a public bath; whose ruins still remain, testimonies of the Roman grandeur. Now *Orense*, in Galicia, still famous for its baths; on the river Minho, 54 miles south-east of Compostella. W. Long. 8. 30. N. Lat. 42. 30. Also a place in the bay of Carthage, (Strabo.) Other *Aquicaldenses*, to the north of Gerunda in Catalonia, (Ptolemy.)

Aquæ Calidæ, a colony between the rivers Serbetes and Savus, in Mauritania Cæsariensis (Ptolemy).

Aquæ Celeinæ, (Ptolemy); or *Cilinæ*, (Antonine). Now *Caldas*, a hamlet on the Minho, in Galicia.

Aquæ Covenarum, a hamlet of Gaul, in Aquitaine, (Antonine), and on the borders of the Convenæ, or le Cominge, at the foot of the Pyrenees, near the source of the Garonne. Now Bagneres. W. Long. 3. 39. N. Lat. 42. 20.

Aquæ Cutiliæ, a lake of the Sabines, in the territory of Reat (Pliny); *Lacus Cutiliensis*, (Varro); with a moveable island in it, (Seneca, Pliny); supposed to be the centre of Italy, (Varro). The waters were medicinal, and extremely cold, good for a weak stomach and in weak nerves; they seemed to act by a kind of suction, which approached to a bite, (Pliny). Vespasian used them every summer; and there he died, (Sueton. Xiphilin from Dio). Now *Lago di Contigliano*.

Aquæ Flaviæ, a town on the confines of Galicia and Portugal, so called from Vespasian and Titus. The inhabitants are called *Aquiflavienses* on coins. Now called *Chiaves*, a mean hamlet; but the ruins of its bridge testify its former grandeur. W. Long. 6. 6. N. Lat. 41. 40.

Aquæ Helvetiæ, described by Tacitus as a municipal town, and much frequented for its excellent water; and though he does not mention its name, Cluverius supposes it to be Baden, in Switzerland, on the rivulet Limat, which soon after falls into the Aar. It is called the Upper, to distinguish it from another called the Lower Baden, in Alsace. E. Long. 8. 49. N. Lat. 47. 55.

Aquæ Merom (Joshua), famous for the defeat of Jabin: supposed to be the lake called *Samachonites*, or *Semechonites*, by Josephus; into which the river Jordan falls, before it comes to the sea of Genesereth, or Galilee.

Aquæ Pannoniæ, famous baths of Austria, now called *Baden*, 28 miles to the south of Vienna.

Aquæ Patavinæ, are baths in the territory of Venice near Padua, (Pliny); called *Fontes Aponi* (Livy, Martial). Now *Bagni d'Abano*. E. Long. 13. 48. N. Lat. 45. 15.

Aquæ Quintianæ, put by Ptolemy in room of the *Aquæ Cilinæ* of Antonine. Now supposed to be *Sarria*, a town of Galicia, on a rivulet of the same name, three leagues to the south of Lugo.

Aquæ Sextiæ, a colony to the north of Marseilles, so called both from the founder Sextius Clavinus, and from its quantity of water, and number of cold and hot springs; built after the defeat of the Salyes, or Salvii, whose territory in the south of Provence, reached from the Rhone to the borders of Italy, (Livy, Velleius, Strabo, Ptolemy). By an inscription the colony appears to have been either increased or renewed by Augustus. In the Notitia it is called *Civitas Aquensis*. Now *Aix*. Here the Teutones and Cimbri were defeated with great slaughter by Marius. E. Long. 6. 4. N. Lat. 48. 4.

Aquæ Statiellæ, or *Statiellorum*, (Pliny), a town in Liguria, on the river Bormia. Now *Acqui*, a town of Montferrat. E. Long. 8. 40. N. Lat. 44. 45.

Aquæ Tauri, hot waters or baths in Tuscany at the distance of three miles from the sea, said to be discovered by a bull, hence the appellation. There are still to be seen the ruins of these baths. Now *Aquapendente*, in Orvieto. E. Long. 12. 40. N. Lat. 42. 20.

AQUÆDUCT, in *Hydraulics* and *Architecture*, a structure formed for conveying water from one place to another, over grounds that are unequal. The word is compounded of the Latin substantive *aqua*, water, and *ductus* a channel by which that water may be conducted.

Architects distinguish two kinds of aquæducts; the *visible*, and the *subterraneous*.—The *visible* are constructed in valleys or marshes, and protracted in longitude or latitude as the situation requires. They are composed of adminicula for supporting the arches and confining the stream, and of arcades.—The *subterraneous* are formed, by piercing the mountains, and conducting them below the surface of the earth. They are built of stone hewn or rough: and covered above with vaults, or with flat stones, which may be termed *flags*; these flags shelter the waters from the heat of the sun.

They divide them still into *double* and *triple* aquæducts; that is to say, such as are supported either by two or by three ranges of arcades. Such was the aquæduct which Procopius records to have been built by Cosroës king of the Persians, for the city of Petra in Mingrelia: it had three conduits upon the same line, each elevated above the other.

Frequently aquæducts are paved. Sometimes the waters flow through a natural channel of clay. Frequently they are conveyed by pipes of lead into reservoirs of the same metal, or into troughs of hewn stone. The channels are cut with an imperceptible descent, that the current may be accelerated by its own weight. Parallel to its course, on each side, is cut a narrow footpath, where people may walk when necessary. By conduits, or grooves, the waters are conveyed into large cisterns, but not forced above their original level. To make them rise and issue from their apertures

Aqueduct. apertures with force, they must be confined in tubes of a small diameter, and abruptly fall from a considerable declivity.

Aquæducts of every kind were long ago the wonders of Rome: the vast quantity of them which they had; the prodigious expence employed in conducting waters over arcades from one place to another, at the distance of 30, 40, 60, and even 190 miles, which were either continued or supplied by other labours, as by cutting mountains and piercing rocks; all this ought to surprise us: nothing like this is undertaken in our times: we dare not even think of purchasing public conveniency at so dear a rate. Appius the censor advised and constructed the first aquæduct. His example gave the public luxury a hint to cultivate these objects; and the force of prodigious and indefatigable labour diverted the course of rivers and floods to Rome. Agrippa, in that year when he was ædile, put the last hand to the magnificence of these works. It is chiefly in this respect that the modern so much resembles the ancient city of Rome. For this advantage, she is peculiarly indebted to Sextus V. and to Paul V. who for grandeur and magnificence emulated the masters of the universe *. There are still to be seen, in different places contiguous to Rome, striking remains of these aquæducts; arches continued through a long space, over which were extended the canals which carried the water to the city. The arches are sometimes low, sometimes raised to a vast height, to humour the tumidities or depressions of the ground. There are some which have two arcades; one constructed above the other; and this precaution was observed, lest the height of a single arcade, if extended as far as the situation required, might render the structure less firm and permament. They are commonly of bricks: which by their cement cohere so strongly, that the parts are not separated without the utmost difficulty.—When the elevations of the ground were enormous, it became necessary to form *subterraneous* aquæducts. These carried the waters to such aquæducts as were raised above ground, in the declivity or at the foot of mountains. If the artificial channel of the water was not susceptible of a downward bias but by passing through a rock, through this they cut a passage at the same height with the superior aqueduct: such a one may be seen above the city of Tivoli, and at the place called *Vivacaro*. The canal which formed the course of the aquæduct is hewn out of the rock to the extent of more than a mile, about five feet in height and four in breadth.

* See *New Memoirs of Italy*, vol. i.

There is one thing, however, which deserves to be remarked. It is, that these aqueducts, which might have been directed in a straight line to the city, did not arrive at it but by frequent and winding mazes. Some have said that this oblique track was pursued to avoid the expence which must attend the building of arcades to an extraordinary height: others, that it was their intention to diminish the impetuosity of the current; which, rolling in a straight line through an immense space, must always have increased its velocity, must have worn the canals by perpetual and forcible attrition, and of consequence afforded an impure and unwholesome draught to the inhabitants. But since there was so great a descent between the cascade of Tivoli and Rome, it is demanded why they should go to draw water from the same river at the distance of more than 20 miles higher; nay, of more than 30 miles, if we reckon the curvatures of its direction through that mountainous country? It is replied, the motive of obtaining the water more salubrious, and more limpid, was sufficient to make the Romans think their labour necessary, and their expence properly bestowed; and to those who reflect that the waters of this river were impregnated with mineral particles, and by no means wholesome, the answer will appear satisfactory. Aqueduct.

If any one will cast his eyes upon Plate 128th of the Antiquities of Father Montfaucon, he will see with how much care these immense works were constructed. From distance to distance spiramenta were left, that, if the water should happen to be stopped by any accident, it might gradually disembogue, till they could clear its ordinary passage. There were likewise, even in the very canals which conveyed the water, cavities considerably deeper than its internal surface, into which the stream was precipitated, and where it remained stagnant till it was refined from mud and feculence; and ponds, where it might expand itself till it was purified. Vol. iv.

The aquæduct of the *Aqua Marcia* had an arch of 16 feet in diameter. The whole was composed of three different kinds of stone; one of them reddish, another brown, and a third of an earth colour. Above, there appeared two canals; of which the highest was fed by the new waters of the Tiverone, and the lower by what they call the *Claudian* river. The entire edifice is 70 Roman feet high. Near this aquæduct, we have in Father Montfaucon the plan of another with three canals; the highest supplied by the water called *Julia*, that in the middle from Tepula, and the lowest from the Aqua Marcia.

The arch of the aqueduct of the Aqua Claudia is of hewn stone, very beautiful; that of the aquæduct of the Aqua Neronia is of bricks: they are each of them 72 Roman feet in height.

The canal of the aquæduct which was called the *Aqua Appia*, deserves to be mentioned for a singularity which is observed in it; for it is not, like the others, plain, nor gradual in its descent; but much narrower at the lower than the higher end.

The consul Frontinus, who superintended the aquæducts under the emperor Nerva, mentions nine of them which had each 13,594 pipes of an inch in diameter. Vigerus observes, that, in the space of 24 hours, Rome received 500,000 hogsheads of water.

We might likewise have mentioned the aquæduct of Drusus, and that of Riminius: but we shall satisfy ourselves with observing here, that Augustus caused all the aquæducts to be repaired; and afterwards pass to other monuments of the same kind, and still more important, which give the most striking ideas of Roman magnificence.

One of these monuments is the aquæduct of Metz, of which a great number of arcades still remain. These arcades crossed the Moselle, a river which is broad and vast at that place. The copious sources of Gorze furnished water for the representation of a sea fight. This water was collected in a reservoir: from thence it was conducted by subterraneous canals formed of hewn stone, and so spacious that a man could walk erect in them: it traversed the Moselle upon its superb and lofty arcades, which may still be seen at the distance of

Aquamboe || Aquarius.

two leagues from Metz; ſo nicely wrought and ſo firmly cemented, that, except thoſe parts in the middle which have been carried away by the ice, they have reſiſted, and will ſtill reſiſt, the ſevereſt ſhocks of the moſt violent ſeaſons. From theſe arcades, other aqueducts conveyed the waters to the baths, and to the place where the naval engagement was mimicked.

If we may truſt Colmenarus, the aqueduct of Segovia may be compared with the moſt admired labours of antiquity. There ſtill remain 159 arcades, wholly conſiſting of ſtones enormouſly large, and joined without mortar. Theſe arcades, with what remains of the edifice, are 102 feet high; there are two ranges of arcades, one above another. The *aqueduct* flows through the city and runs beneath the greateſt number of houſes which are at the lower end.

After theſe exorbitant ſtructures, we may be in ſome degree believed when we ſpeak of the *aqueduct* which Louis XIV. cauſed to be built near Maintenon, for carrying water from the river Bucq to Verſailles: it is perhaps the greateſt aqueduct which now ſubſiſts in the world: it is 7000 fathoms in length, and contains 242 arcades.

AQUAMBOE, one of the greateſt monarchies on the coaſt of Guinea in Africa, ſtretching 20 miles in breadth, and ten times that ſpace in length from eaſt to weſt. According to Boſman, the coaſt is divided into a great number of petty royalties, but all of them ſubject to the king of Aquamboe, who indiſcriminately uſes an unlimited authority over them and the meaneſt of his ſubjects. His deſpotiſm gave riſe to a proverbial ſaying, that "there are only two ranks of men at Aquamboe; the royal family, and ſlaves." The natives of this country are haughty, turbulent, and warlike; and their power is formidable to all the neighbouring nations. They grievouſly infeſt ſuch nations as are tributaries to the king of Aquamboe, entering their territories by troops, and carrying off from the inhabitants whatever they think proper; nor do they ever meet with any oppoſition from the inhabitants, as they are ſenſible the king would not fail to reſent this as an indignity offered to him.

AQUAPENDENTE. See Fabricius.

AQUARIANS, Chriſtians in the primitive church who conſecrated water in the euchariſt inſtead of wine. This they did under pretence of abſtinence and temperance; or, becauſe they thought it univerſally unlawful to eat fleſh or drink wine. Epiphanius calls them *Encratites*, from their abſtinence; St Auſtin, *Aquarians*, from their uſe of water; and Theodoret, who ſays they ſprang from Tatian, *Hydroparaſtatæ*, becauſe they offered water inſtead of wine.

Beſides theſe, there was another ſort of Aquarians, who did not reject the uſe of wine as unlawful; for they adminiſtered the euchariſt in wine at evening ſervice; but, in their morning aſſemblies, they commonly uſed water, for fear the ſmell of wine ſhould diſcover them to the heathens.

AQUARIUS, the WATER-CARRIER, in *Aſtronomy*, the 11th ſign in the zodiac, reckoning from Aries; from which alſo the 11th part of the ecliptic takes its name.—The ſun moves through Aquarius in the month of January; it is marked thus, ♒.

The poets feign, that Aquarius was Ganymede, whom Jupiter raviſhed under the ſhape of an eagle, and carried away into heaven, to ſerve as a cup-bearer, in the room of Hebe and Vulcan; whence the name.—Others hold, that the ſign was ſo called, becauſe, when it appears in the horizon, the weather uſually proves rainy.

Aquarius ||

The ſtars in the conſtellation Aquarius, in Ptolemy's catalogue, are 45; in Tycho's 41; in Hevelius's 47; in Flamſted's 108.

AQUARTIA. See Botany *Index*.

AQUATIC, in *Natural Hiſtory*, an appellation given to ſuch things as live or grow in water.

AQUATINTA, a method of etching on copper, lately invented, by which a ſoft and beautiful colour is produced, reſembling a fine drawing in water colours or Indian ink.

Previous to the operation upon the plate, the following powder muſt be prepared.—Take of aſphaltum and fine tranſparent roſin, equal parts, ſuppoſe two ounces of each, and pound them ſeparately. Through a muſlin ſieve (which may be formed with part of a chipbox of three or four inches diameter) ſift upon a ſheet of paper a thin ſtratum of the aſphaltum, above which ſift a ſimilar layer of the roſin, and upon this another layer of aſphaltum, continuing theſe alternate layers till both of the powders are exhauſted; then paſs the mixture through the ſame ſieve upon the paper once or twice, or till both appear to be ſufficiently incorporated; when the powder is ready for uſe. Some inſtead of the above mixture, uſe gum ſandarach pounded.

The main proceſs is as follows:—A copperplate being poliſhed in the uſual way, lay the etching ground upon it, and etch the outlines of your deſign in the manner directed under the article Etching: The ground is then to be ſoftened with a little greaſe, and wiped off with a piece of rag: leaving, however, as much greaſe upon the plate as juſt to dim the copper. You now ſift your powder upon the ſurface of the plate; after which, ſtrike the other ſide of it pretty ſmartly againſt the edge of the table, in order to diſcharge it of the looſe powder: This done, with a hand-vice hold the back of the plate over a chaffing diſh of charcoal fire, till it become ſo hot as to give pain upon being touched with the back of the hand; and the powder which adhered to the greaſe will now be fixed to the plate. The plate being then ſuffered to cool, take turpentine varniſh mixed with ivory black; and with a hair pencil dipt in it, cover all the lights or places where there is no work or ſhades. A rim or border of bees-wax is now to be raiſed under the plate: Then having reduced the aquafortis to a proper ſtrength by vinegar or water, you pour it on, and let it ſtand five minutes for the firſt or lighteſt ſhade: after which, pour it off; and having waſhed the plate with water, ſet it on edge to dry: Then with the varniſh ſtop up your light ſhades, pour on the aquafortis for the ſecond tint, and let it ſtand five minutes more; proceeding in the ſame manner for every tint till you produce the darkeſt ſhades. If a bold open ground is wanted in any part, this requires an after operation: The ground muſt be laid as the other, by ſifting on the powder; only this powder is much coarſer, and the plate muſt be much more heated in order that the particles of the powder may ſpread, and form ſmall circles: even good clear roſin will do by itſelf.

Aquatinta li Aquila.

In etching landſcapes, the ſky and diſtant objects are alſo performed by a ſecond operation, and the powder is ſifted upon the plate with a finer ſieve. If the trees or any part of the fore-ground require to be higher finiſhed, the plate muſt be entirely cleanſed from greaſe with bread, and a ground laid in the common way of etching; when you may finiſh as highly and neatly as you pleaſe with the needle or point, by ſtippling with dots, and biting up thoſe parts, or by a rolling-wheel.

The preceding is the method for prints of one ſingle tint. But if different colours are to be expreſſed, there will be required as many different plates, each plate having only the part etched upon it which is deſigned to be charged with its proper colour: unleſs (as may happen in particular ſubjects) ſome of the colours are ſo diſtant from each other as to allow the printer room to fill them in with his rubber without blending them; in which caſe, two or more different colours may be printed from the ſame plate at once.—Where different plates are neceſſary, a ſeparate one, having a pin in each corner, muſt be provided as a ſole or bottom to the aquatinta plates; and theſe again muſt be exactly fitted, having each a ſmall hole in their corners for paſſing over the pins of the ſole; the ſaid pins ſerving the double purpoſe of retaining the plates ſucceſſively in their due poſition, and of directing the printer in placing the paper exactly on each plate ſo as not to ſhift; by which means each tint or colour will be exactly received on its proper place.—This is the method practiſed at Paris. A landſcape or ſimilar ſubject, however, may be printed off at once in the different proper colours, by painting theſe upon the plate. In this caſe, the colours muſt be pretty thick in their conſiſtence; and the plate muſt be carefully wiped in the uſual way after the laying on of each tint, as well as receive a general wipe upon its being charged with all the tints.

This art is kept as ſecret as poſſible by thoſe who practiſe it; and it is believed that no particular explanation or directions, before the preſent, have been communicated to the public. In order to ſucceed, however, great care and judgment are requiſite; and much depends upon a certain nicety of management, which is only attainable by practice.

AQUAVIVA, a town of the kingdom of Naples, and province of Bari.

AQUEDUCT. See Aquæduct.

AQUEOUS, in a general ſenſe, ſomething partaking of the nature of water, or that abounds with it.

Aqueous Humour. See Anatomy, p. 276.

AQUILA, in *Ornithology*, a ſynonyme of the eagle. See Falco.

Aquila, the Eagle, in *Aſtronomy*, a conſtellation of the northern hemiſphere; uſually joined with Antinous. The ſtars in the conſtellation Aquila and Antinous, in Ptolemy's catalogue, are 15; in Tycho's 19; in Hevelius's 42; in the Britannic catalogue, 71.

Aquila, a fine large city of Italy, and the capital of Abruzzo, ſeated on a hill, on the banks of the river Peſcaro, near its ſource. It has an ancient caſtle, and is a biſhop's ſee immediately under the pope. The land about it produces great plenty of ſaffron. It was very near being all deſtroyed by an earthquake, in February 1703. The firſt ſhock was ſo terrible, that the inhabitants abandoned the city; but returning to veſpers, it being Candlemas day, the ſhocks followed one another with ſuch violence, that 24,000 people periſhed, and great numbers were wounded; 800 were killed in one ſingle church; many other churches, monaſteries, noble buildings, and the townhouſe, were either ſwallowed up or overturned, together with the greater part of the city and its walls. Aquila ſtands 30 miles from the ſea, and about 16 from the confines of the pope's dominions. E. Long. 14. 20. N. Lat. 42. 20.

Aquilegia, Aquileia.

AQUILEGIA, columbine. See Botany *Index*.

AQUILEIA, a large city of the Carni, or Veneti, and a noble Roman colony, which was led thither between the firſt and ſecond Macedonian wars, (Livy). It is waſhed by two rivers, the Natiſo and Turrus, (Pliny). The reaſon of leading this colony was, in order to be a bulwark againſt the neighbouring barbarians. The colony was afterwards increaſed with 1500 families by a decree of the ſenate, (Livy); from which it became a very famous port town, (Herodian). The emperor Julian aſcribes the appellation to the augury of an eagle at the time of building it; but Iſaac Voſſius on Mela, to the great plenty of water, as if the town were called *Aquilegia*. The harbour, at the mouth of the Natiſo, is diſtant 60 ſtadia from the city; ſo that ſhips of burden are towed up the river, (Strabo). In 452 it was beſieged by Attila with an innumerable hoſt of barbarians. The walls were aſſaulted by a formidable train of battering rams, moveable turrets, and engines that threw ſtones, darts, and fire; and the monarch of the Huns employed the forcible impulſe of hope, fear, emulation, and intereſt, to ſubvert the only barrier which delayed the conqueſt of Italy. Aquileia was at that period one of the richeſt, the moſt populous, and the ſtrongeſt of the maritime cities of the Hadriatic coaſt. Three months were conſumed without effect in the ſiege; till the want of proviſions and the clamours of his army compelled Attila to relinquiſh the enterpriſe, and reluctantly to iſſue his orders that the troops ſhould ſtrike their tents the next morning and begin their retreat. But as he rode round the walls, penſive, angry, and diſappointed, he obſerved a ſtork preparing to leave her neſt in one of the towers, and to fly with her infant family towards the country. He ſeized, with the ready penetration of a ſtateſmen, this trifling incident which chance had offered to ſuperſtition; and exclaimed, in a loud and cheerful tone, that ſuch a domeſtic bird, ſo conſtantly attached to human ſociety, would never have abandoned her ancient ſeats, unleſs thoſe towers had been devoted to impending ruin and ſolitude. The favourable omen inſpired an aſſurance of victory; the ſiege was renewed and proſecuted with freſh vigour; a large breach was made in the part of the wall from whence the ſtork had taken her flight; the Huns mounted to the aſſault with irreſiſtible fury; and the ſucceeding generation could ſcarcely diſcover the ruins of Aquileia. The place, however, is ſtill called *Aquileia*; and there are ſeveral inſcriptions and antiquities to be ſeen in it, which are worthy of a traveller's notice; and, though dwindled into a poor village, it gives a title to the patriarch of Aquileia.

The

Aquilicium || Aquinum.

The patriarch is named by the Venetians, and reſides at Udino, becauſe the town of Aquileia belongs to the Houſe of Auſtria. E. Long. 13. 30. N. Lat. 46. 20.

AQUILICIUM, or AQUILICIANA, in Roman antiquity, ſacrifices performed in times of exceſſive drought, to obtain rain of the gods.

AQUILINE, ſomething belonging to or reſembling an eagle: Thus an aquiline noſe is one bent ſomewhat like an eagle's beak.

AQUILO, is uſed by Vitruvius for the north-eaſt wind; or that which blows at 45° from the north toward the eaſt point of the horizon.—The poets gave the name *aquilo* to all ſtormy winds dreaded by the mariner.

AQUILUS, among the ancients, a dark or duſky colour approaching to black. Hence ſome of the Heathen gods were called *dii aquili*, q. d. *nigri*.

AQUIMINARIUM, in antiquity, a kind of luſtral veſſel, wherein the Romans carried their holy water for expiation and other religious offices.

AQUINAS, ST THOMAS, ſtyled the *Angelical Doctor*, was of the ancient and noble family of the counts of Aquino, deſcended from the kings of Sicily and Arragon; and was born in the caſtle of Aquino, in the Terra di Lavora in Italy, in the year 1224 or 1225. He entered into the order of the Dominicans; and, after having taught ſchool divinity in moſt of the univerſities of Italy, at laſt ſettled at Naples; where he ſpent the reſt of his life in ſtudy, in reading of lectures, and in acts of piety; and was ſo far from the views of ambition or profit, that he refuſed the archbiſhopric of that city, when it was offered him by Pope Clement IV. He died in 1274, leaving an amazing number of writings, which were printed at Venice in 17 vols. folio, in the year 1490. He was canonized by Pope John XXII. in the year 1323; and Pius V. who was of the ſame order with him, gave him, in 1567, the title of the Fifth Doctor of the church, and appointed his feſtival to be kept with the ſame ſolemnity as thoſe of the other four doctors. His authority has always been of great importance in the ſchools of the Roman Catholics. Lord Herbert, in his life of Henry VIII. tells us, that one of the principal reaſons which induced that king to write againſt Luther was, that the latter had ſpoken contemptuouſly of Aquinas.

AQUINO, PHILIP D', in Latin *Aquinas* or *Aquinius*, having turned from Judaiſm, had a penſion from the clergy of France; and acquired much reputation by his knowledge of the Hebrew language, which he taught at Paris, in the reign of Louis XIII. and by the books he publiſhed, among which is his *Dictionarium Hebræo-Chaldæo-Talmudico-Rabbinicum*. His grandſon, Anthony D'Anquin, was firſt phyſician to Louis XIV.

AQUINO, a town of Italy, in the kingdom of Naples, and Terra di Lavora; a biſhop's ſee, but ruined by the emperor Conrade, and now conſiſting of about 35 houſes. It was the birthplace of the poet Juvenal, and of Thomas Aquinas. E. Long. 14. 30. N. Lat. 42. 32.

AQUINUM, in *Ancient Geography*, a large municipal town, and a Roman colony on the borders of the Samnites, waſhed by the river Melpha (Strabo). The inhabitants are called *Aquinates*. Now *Aquino*, but almoſt in ruins, in the territory of Lavora. E. Long. 17. 11. N. Lat. 41. 35.

AQUITANIA, in *Antient Geography*, one of the three principal diviſions of Gallia Comata (Cæſar); bounded by the Garonne, the Pyrenees, and the ocean: this is the *Aquitania Cæſariana*, or *Vetus*. Authors ſet the different boundaries, viz. the Loire, the Cevennes, the Pyrenees, and the ocean (Strabo). It was called *Gallia Aquitanica* (Pliny); and in the old Notitiæ *Provincia Aquitanica*. The people are called *Aquitani* (Cæſar). Now compriſing Guienne (which ſeems to be a corruption of Aquitania) and Gaſcony.

AR, in *Ancient Geography*, the metropolis of Moab, in Arabia Petræa (Moſes), and the royal reſidence, ſituated on the eaſt ſide of the river Arnon. It was called alſo *Rabba* (Joſhua); and, to diſtinguiſh it from Rabba of the Ammonites, *Rabbat Moab*, and on coins *Rabbath Moma* (Reland). Eulebius ſays it was called *Areopolis* in his time, from *Ar* and *Polis*. The inhabitants are called *Areopolitæ*. St Jerome ſays that this city was entirely deſtroyed by an earthquake when he was a young man.

ARA THURIBULI, the altar of incenſe, in *Aſtronomy*, a ſouthern conſtellation, not viſible in our hemiſphere, conſiſting, according to Ptolemy, of ſeven ſtars: and according to Sharp's Catalogue, annexed to that of Mr Flamſted, of nine ſtars.

ARA, in *Aſtronomy*, a ſouthern conſtellation, containing eight ſtars.

ARAB or ARABIAN HORSE. See EQUUS.

ARABESQUE, or ARABESK, ſomething done after the manner of the Arabians. *Arabeſque*, *Grotteſque*, and *Moreſque*, are terms applied to ſuch paintings, ornaments of friezes, &c. wherein there are no human or animal figures, but which conſiſt wholly of imaginary foliages, plants, ſtalks, &c. The words take their riſe from hence, that the Moors, Arabs, and other Mahometans, uſe theſe kinds of ornaments; their religion forbidding them to make any images or figures of men or other animals.

ARABIA, a country of Aſia, famous from the remoteſt antiquity for the independency of its inhabitants during the vaſt conqueſts of the Aſſyrians, Perſians, Greeks, and Romans; and, in later times, for being the centre of an empire equal, if not ſuperior, in extent to any that ever exiſted.

This country, or at leaſt the greater part of it, was in the earlieſt ages called *Arabah*. Concerning the etymology of this word there are various conjectures. It has moſt generally been derived from the Hebrew word ערב ſignifying, *the weſt*, *mixture* or *traffic*; but, according to M. Volney, *Arab*, in the ancient language of theſe countries, ſignifies a *ſolitude* or *deſert*. In its largeſt extent, Arabia lies between the 12th and 35th degrees of N. Lat. and the 36th and 61ſt of E. Long. Its greateſt length from north to ſouth is about 1430 miles, and its breadth from eaſt to weſt is 1200. It is bounded on the weſt by Paleſtine, part of Syria, the iſthmus of Suez, and the Red ſea, called by the Arabs the ſea *Al Kolzum*; on the eaſt by the Euphrates, the Perſian gulf, and bay of Ormus; on the north, by part of Syria, Diyar Becr, Irak, and Khuzeſtan; and on the ſouth by the ſtraits of Babelmandel and the Indian ocean. It grows narrower

1 Whence named

2 Boundaries, &c.

Arabia. rower as we approach the frontiers of Syria and Diyar Beer: and, by reaſon of the proximity of the Euphrates to the Mediterranean, may be looked upon as a peninſula, and that one of the largeſt in the whole world.—Arabia Proper, however, is much narrower, including little more than what was comprehended by the ancients under the name of Arabia Felix, which we ſhall preſently deſcribe; and here the Arabs have been ſettled almoſt ſince the flood.

3 Diviſion. The firſt diviſion of the peninſula of Arabia was into *Arabah* and *Kedem*, as we learn from Scripture; the firſt of which implies the weſt, and the other the eaſt, denoting the ſituation of the two countries. Ptolemy was the firſt who divided the peninſula we ſpeak of into three parts, Arabia Petræa, Arabia Deſerta, and Arabia Felix, which diviſion has generally prevailed ſince his time.

Arabia Petræa, on the eaſt, was bounded by Syria and Arabia Deſerta; on the weſt, by Egypt, or rather the iſthmus of Suez which ſeparates Aſia from Africa, and the Hieropolitan gulf or weſtern arm of the Red ſea; on the north, by Paleſtine, the lake Aſphaltites, and Cœloſyria; and on the ſouth by Arabia Felix. This tract did not admit of much cultivation, the greateſt part being covered with dry ſands, or riſing into rocks, interſperſed here and there with ſome fruitful ſpots. Its metropolis was Petra, which by the Syrians was ſtyled *Ralam*, and in Scripture *Jokthеel*. Several other cities of Arabia Petræa are mentioned by Ptolemy; but as it is very improbable ſuch a barren country ſhould abound with large cities, we muſt look upon them as inconſiderable places.

Arabia Deſerta was bounded on the north by the Euphrates, which ſeparated it from Meſopotamia; on the weſt, by Syria, Judæa, and Arabia Petræa; on the eaſt, by a ridge of mountains which ſeparated it from Babylonia and Chaldea; on the ſouth, by Arabia Felix, from which it was likewiſe ſeparated by ſeveral ridges of hills. By far the greateſt part of this kingdom, as well as the former, was a loneſome deſert, diverſified only with plains covered with ſand, or mountains conſiſting of naked rocks and precipices; nor were they ever, unleſs ſometimes at the equinoxes, refreſhed with rain. The few vegetables which they produced were ſtunted by a perpetual drought, and the nouriſhment afforded them by the nocturnal dews was greatly impaired by the heat of the ſun in the daytime. Throughout the deſerts were found huge mountains of ſand, formed by the violence of the winds that continually blew over them in the day-time, though they ceaſed in the night. Wells and fountains were for the moſt part exceedingly rare; however, notwithſtanding the ſterility of theſe countries, the vaſt plains of ſand juſt now mentioned were interſperſed with fruitful ſpots, which appeared here and there like ſo many iſlands in the midſt of the ocean. Theſe being rendered extremely delightful by their verdure, and the more ſo by the neighbourhood of thoſe frightful deſerts, the Arabs encamped upon them: and having conſumed every thing they found upon one, removed to another, as is the cuſtom of their deſcendants the Bedoweens at this day. Theſe fruitful ſpots were likewiſe frequent in Libya, and by the Egyptians called *auaſes*, or *abaſes*, as we learn from Strabo. The barren part of Arabia Felix, bordering upon the Red ſea, was in like manner interſperſed with abaſes; which probably gave the name of *Abaſeni* to a nation ſettled there, and in the adjacent fertile region. A body of theſe, it is ſaid, croſſing the ſtraits of Babelmandel, paſſed into Ethiopia, which from them received the name of *Abaſſia*. From this account of Arabia Deſerta, we may reaſonably conclude, that the towns ſaid by Ptolemy to have been ſituated in it were places of very little conſequence. Arabia.

Arabia Felix was bounded on the north by the two kingdoms juſt deſcribed; on the ſouth, by the Red ſea: on the eaſt and weſt, by part of that ſea, together with the Arabian and Perſian gulfs. In Strabo's time, it was divided into five provinces, by the oriental hiſtorians called *Yaman*, *Hejaz*, *Tehamah*, *Najd*, and *Yamama*. In this diſtrict ſtood ſeveral towns, particularly Nyſa, famous for being the birthplace of Bacchus; and Muſa, or Muza, a celebrated emporium or harbour, where the Arabian merchants reſorted with their frankincenſe, ſpices, and perfumes. Theſe two were ſituated in the province of Yaman. In that of Hejaz ſtood the ſtill more famous cities of Mecca and Medina; alſo Thaifa or Taifa, Gjudda or Joddo, Yanbo or Al Yanbo, and Madian, the Modiana of Ptolemy, and the Midian or Madian of Scripture.

4 When peopled. At what time the above-mentioned kingdoms were firſt peopled we have no certain accounts. The moſt conſiderable nations inhabiting Arabia Petræa, in the early ages, were the Iſhmaelites, the Nabatæi or Nabatheans, the Cedræi or Kedareni, and the Agareni or Hagareni; and of theſe the Iſhmaelites were the moſt powerful, if they did not comprehend all the reſt; and if the Hagareni were not the ſame people with them, they muſt at leaſt have been nearly related. Kimchi, an oriental hiſtorian, inſinuates, that thay were originally the children of Hagar by an Arab, after ſhe had left Abraham. In after ages, the names of all the nations ſituated here were abſorbed in that of *Saracens*, by which the Iſhmaelites are diſtinguiſhed in the Jeruſalem Targum. A nation alſo is mentioned by Pliny, called *Arraceni*, and *Saraceni* by Ptolemy and Dioſcorides, which was probably no other than the Iſhmaelites above mentioned. In Arabia Deſerta ſeveral tribes reſided, all of whom were very obſcure, except the Aiſitæ and Agræi. The former are ſuppoſed by Bochart to have been Job's countrymen, and the latter to have been the ſame with the Hagareni, Arraceni, or Saraceni, above mentioned. Arabia Felix was inhabited by many different tribes; the moſt remarkable of which were the Sabæi, Gerræi, Minæi or Minnæi, Atramitæ, Maranitæ, Catabani, Aſcitæ, Homeritæ, Sapphoritæ, Omanitæ, Saraceni, Nabathæi, Thamydeni, and Bnizomenæ; but neither their limits nor ſituation can now be determined with any manner of preciſion.

5 Diviſion of the Arabs. According to the oriental hiſtorians, the Arabs are to be divided into two claſſes; viz. the *old loſt Arabians*, and the *preſent*. The moſt famous tribes among the former were thoſe of Ad, Thamud, Taſm, Jades, Jorham, Amalek, Amtem, Haſbem, Abil, and Bar. Concerning theſe, though now entirely loſt and ſwallowed up among other tribes, there are ſome remarkable traditions, of which the following may ſerve as a ſpecimen.

The

Arabia.

6 Tradition concerning the tribe of Ad.

The tribe of Ad deduced their origin from Ad the son of Aws, or Uz, the son of Aram, the son of Shem, who, after the confusion of tongues, settled in Al Ahkaf, or the winding sands in the province of Hadramant, on the confines of Yaman, where his posterity greatly multiplied. Their first king was Sheddad, the son of Ad, who built a stately palace, and made a delightful garden in the deserts of Aden, which he designed as an imitation of the celestial paradise. This garden he called *Irem*: and when it was finished, he set out with a great retinue to take a view of it; but, having some thoughts of assuming divine honours, he was destroyed by a tempest from heaven, while yet a day's journey from his paradise. The garden and palace, however, were preserved, though invisible, as a monument of divine vengeance.

After the death of Sheddad, the kingdom of Ad was governed by a long series of princes, concerning whom many fables are related by the eastern writers. The conclusion of their history, however, is as follows. "The Adites, in process of time, falling from the worship of the true God into idolatry, God sent the prophet Hûd, supposed to be the same with Heber, to preach to and reclaim them. But they refusing to acknowledge his mission or to obey him, God sent a hot and suffocating wind, which blew seven nights and eight days, and entering at their nostrils passed through their bodies, and destroyed them all, a very few only excepted, who had listened to Hûd, and retired with him to another place." Others relate, "that, before this terrible catastrophe, they had been previously chastised with a three years drought; and therefore sent Kail Ebn Ithar, and Morthen Ebn Sdaa, with 70 other principal men, to Mecca, then in the hands of the tribe of Amalek, whose prince was Moahwiyah Ebn Beer, to obtain of God some rain. Kail having begged of God that he would send rain to the people of Ad, three clouds appeared, a white, a red, and a black one; and a voice from heaven ordered him to choose which he would. Kail failed not to make choice of the last, thinking it would be laden with most rain; but when this cloud came over them, it proved to be fraught with the divine vengeance, and a tempest broke forth from it which destroyed them all.

7 Arabs from whom descended.

The *present Arabs*, according to their own historians, are sprung from Kahtan, the same with Joktan, the son of Eber, and Adnan, descended in a direct line from Ishmael the son of Abraham. The former of these they called the *genuine* or *pure* Arabs, and the latter the *naturalized* or *infititious* Arabs.

Joktan the son of Eber had 13 sons, who some time after the confusion of languages settled in Arabia, extending themselves from Mesha to Sephar, a mountainous place in the south-eastern part of that peninsula. According to the Arabian historians, he had 31 sons, all of whom left Arabia and went into India, except two, viz. Yarab and Jorham; the former of whom, they say, gave the name both to their country and language. Ishmael and his mother Hagar having been dismissed by Abraham, entered into the wilderness of Paran, as related in the book of Genesis. The sacred historian informs us, that during his residence in the wilderness he married an Egyptian; and the Arabian writers say that he also took to wife the daughter of Modab king of Hejaz, lineally descended from Jorham the founder of that kingdom. By the Egyptian he was probably the father of the Scenite or wild Arabs; and having allied himself to the Jorhamites, he is considered by the Arabians as the father of the greatest part of their nation.

8

Kahtan, or Joktan, is said to have first reigned, and to have worn a diadem, in Yaman; but the particulars of his reign we nowhere learn. He was succeeded by Yarab already mentioned, he by Yashab, and Yashab by Abd Shems. He was successful in his expeditions against his enemies, carried off great spoils, and took many of them prisoners.

9

He is said to have built the city of Saba or Mareb, and above it a dyke or building, which formed a vast reservoir, containing all the water that came down from the mountains. By means of this reservoir the kings of Yaman not only supplied the inhabitants of Saba and their lands with water, but likewise kept the territories they had subdued in greater awe, as by cutting off their communication with it they could at any time greatly distress them.

Abd Shems was succeeded by his son Hamyar, from whom the tribe of Hamyar is said to take its name; and he by a series of 17 kings, concerning whom we have no remarkable particulars, except that from one of them, called *Africus*, the continent of Africa took its name.

10 Balkis supposed to be the queen of Sheba.

The last of these was succeeded by a daughter named *Balkis* or *Belkis*, whom some will have to be the queen of Sheba who paid a visit to Solomon. After Balkis came Malca, surnamed *Nasherolneam* on account of his magnificence and liberality. Having had bad success in an expedition, where his army was overwhelmed by torrents of sand, he caused a brazen statue to be erected, with the following inscription in the old Hamyaritic character: "There is no passage behind me, no moving farther; the son of Sharhabil." He was succeeded by Shamar Yaraash, so called on account of his being affected with a constant tremor.

11 Samarcand built.

To this prince the city of Samarcand is said to owe its existence. After Shamar Yaraash we have a list of 15 kings, of whom nothing worth mentioning is recorded, except of one Abu Carb Asaad, who adorned the Caaba or temple of Mecca with tapestry, and first introduced Judaism among the Hamyarites. He was put to death by his subjects, probably on account of religion. The last of the 15 kings above mentioned was called *Abrahah*, who was succeeded by his son Sabban. He had that famous sword called *Samsannah*, which afterwards came into the hands of the caliph Al Rashid. This prince was succeeded by Dhu Shanater, who had six fingers on each hand. He was abandoned to unnatural lust, and dethroned for abusing some of the noblest youths in the kingdom.

12 Yusef, a bigotted persecutor.

To him succeed Yusef, who lived about 70 years before Mahomet. He persecuted bigotedly all those who would not turn Jews, putting them to death by various tortures, the most common of which was throwing them into a glowing pit of fire; whence he had the appellation of the *lord of the pit*. This persecution is taken notice of in the Koran. The last of the Hamyaritic monarchs was Dhu Jadan, according to Abulfeda; but, according to others, the Yusef just mentioned, who was surnamed *Dhu Nowas* on account of his flowing curls, and was the last who reigned in an uninterrupted succession. He was a bigotted Jew, as already mentioned; and treated his subjects with such

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such barbarity, that they were obliged to ask the assistance of Elesbaas, or Elatbaan, king of Ethiopia, against him. Dhu Nowas, not being able to make head against the Ethiopians, was at last driven to such extremity, that he forced his horse into the sea, and lost both his life and crown together.

13 His subjects call in the king of Ethiopia, who dethrones Yusef.

The king of Ethiopia, having thus become master of Yaman, established there the Christian religion, and fixed upon the throne one Abryat an Ethiopian. He was succeeded by Abraha-Ebn-Al-Sabah, surnamed the *Slit-nosed*, from a wound he had formerly received in it. He was likewise styled *lord of the elephant*, from a story too ridiculous to deserve notice. He was succeeded by two other Ethiopian princes; but at last Sief Ebn Dhu Yazan, of the old royal family of Hamyar, having obtained assistance from the king of Persia, which had been denied him by the emperor Heraclius, recovered his throne, and drove out the Ethiopians; but was himself slain by some of them who were left behind. The succeeding princes were appointed by the Persians, till Yaman fell into the hands of Mahomet.

14 Christian religion established in Arabia.

15 Ethiopians driven out.

We have already taken notice of the vast mound or reservoir made by Abd Shems, from which he supplied the city of Saba with water. This building stood like a mountain above the city, and was by the Sabæans esteemed so strong, that they were under no fear of its ever failing. The water rose almost to the height of 20 fathoms; and was kept in on every side by a work so solid, that many of the inhabitants had their houses upon it. About the time of Alexander the Great, however, a terrible inundation happened. According to the Arabian historians, God being displeased at the pride and insolence of the inhabitants of this city, resolved to humble them: and for this purpose sent a mighty flood, which broke down the mound by night whilst the inhabitants were asleep, and carried away the whole city with the neighbouring towns and people. This inundation is styled in the Koran the *inundation of Al-Haram;* and occasioned so terrible a destruction, that from thence it became a proverbial saying to express a total dispersion, "that they were gone and scattered like Saba."—By this accident no less than eight tribes were forced to remove their habitations; some of which gave rise to the kingdoms of Hira and Ghassan.

16 Terrible inundation by the breaking down of the reservoir of Saba.

17 Origin, &c. of the kingdom of Hira.

The kingdom of Hira was founded by Malec, a descendant of Cahlan the brother of Hamyar; but after three descents, the throne came by marriage to the Lakhmians, who were descendants of Lakhm the son of Amru, the son of Abd Ems. These princes, whose general name was *Mondar*, preserved their dominion, notwithstanding some small interruption from the Persians, till the caliphate of Abu Becr, when Al Mondar Maghrur, the last of them, lost his life and crown by the arms of Khaled-Ebn-Al-Walid. This kingdom continued 622 years and eight months, according to Ahmed Ebn Yusef. Its princes were under the protection of the kings of Persia, and were their lieutenants over the Arabs of Irak, as the kings of Ghassan were for the Roman emperors over those of Syria.

18 Of Ghassan.

The kingdom of Ghassan was founded by the tribe of Azd, who according to some, settling in Syria Damascena, near a water called *Ghassan*, from thence took their name; but others say they went under this appellation before they left Yaman. Having driven out the Dajaamian Arabs, who before possessed the country, they made themselves masters of a considerable territory. Here they maintained themselves, according to some 400, according to others 600, and according to Abulfeda 613 years, when the last of their kings submitted to the caliph Omar, and embraced the Mahometan religion; but receiving afterwards a disgust, soon returned to Christianity, and took refuge in Constantinople. Arabia.

19 Of Hejaz.

The kingdom of Hejaz was founded by Jorham the son of Kahtan, where princes of his line reigned till the time of Ishmael, who married the daughter of Modad one of those princes. Some authors relate that Kidar, one of Ishmael's sons, had the crown resigned to him by his uncles the Jorhamites: but, according to others, the descendants of Ishmael expelled that tribe; who, retiring to Johainah, were after various adventures destroyed by an inundation. After the expulsion of the Jorhamites, the government of Hejaz seems not to have continued long in the hands of one prince, but to have been divided among the heads of tribes, almost in the same manner as the Arabs of the desert are governed at this day. The tribe of Khozaab, after the above-mentioned inundation of Saba, fled into the kingdom of Hejaz, and settled themselves in a valley called *Marri* near Mecca. Here they founded an aristocracy, assuming to themselves both the government of the city of Mecca, and the custody of the Caaba or temple there. They continued masters of this city and territory, as well as presidents of the Caaba, for many ages, till at length one Kosa, of the tribe of Koreish, circumvented Abu Gabshan, a weak and silly man, of whom, while in a drunken humour, he bought the keys of the temple for a bottle of wine; but when Abu Gabshan grew cool, and reflected on his imprudence, he sufficiently repented of what he had done; whence the Arabian proverbs, "More vexed with late repentance than Abu Gabshan; More foolish than Abu Gabshan," &c. The tribe of Khozaab endeavoured afterwards to give some disturbance to the Koreish in the possession of the keys of the Caaba, which furnished the latter with a pretence for depriving them of the civil government of Mecca. After the Koreish had possessed themselves of this city, they kept up the same form of government which had prevailed there before. Besides these kingdoms, there were many others of lesser note, of which we find nothing remarkable.

20 Tribe of Khozaab assumes the government of Mecca.

21 Folly of Abu Gabshan.

Thus we have briefly mentioned the most memorable events recorded by the Arabian historians previous to the time of Mahomet; but, before entering upon an account of that famous impostor and the kingdom founded by him, it will be proper to take notice of several circumstances in different parts of the world, which at that time concurred to facilitate his scheme, and without which, in all probability, he would never have been able to accomplish it.

22 Causes of Mahomet's success.

The first and great cause of Mahomet's success in his imposture, was the gross corruption and superstition with which the Christian religion was at that time obscured in all parts of the world. Had the pure doctrines of Christianity been then as publicly known as the ridiculous fopperies which deformed the Eastern and Western churches, Mahometanism could never have got a hearing. But along with the true religion, mankind seemed also to have lost the use of their rational

Arabia. rational faculties, ſo that they were capable of ſwallowing the groſſeſt abſurdities; ſuch as it now appears almoſt incredible that any of the human race could receive as truths. Another cauſe was, the manner of government and way of life among the Arabs. Divided into ſmall independent tribes, they never were capable of a firm union but by ſuperſtition; and had Mahomet attempted their conqueſt in any other way, it was impoſſible he could have ſucceeded. As there were alſo among them Jews, Pagans, and Chriſtians of all ſorts, this impoſtor, by adopting ſomething out of every religion then extant, cunningly recommended himſelf to the profeſſors of every one of them. Add to all this, that by allowing of polygamy, and ſetting forth his paradiſe as conſiſting in the enjoyment of women, he adapted himſelf to the corrupt diſpoſitions of mankind in general.

If the diſtracted ſtate of religion favoured the deſigns of Mahomet on the one hand, the weakneſs of the Grecian and Perſian monarchies aſſiſted him no leſs powerfully on the other. Had thoſe once formidable empires been in their vigour, either of them would have been ſufficient to cruſh Mahometaniſm in its birth; but both of them were then ſtrangely reduced. The Roman empire had continued to decline after the time of Conſtantine; the weſtern parts of it were then entirely overrun by the Goths and other barbarous nations; and the eaſtern, or Greek empire, was ſo much reduced by the Huns on the one hand, and the Perſians on the other, as to be incapable of making any great effort. The Perſian monarchy itſelf was in little better condition. It is true, they ravaged the dominions of the Greeks, and often overcame them in the field; but that was owing more to the weakneſs of the Grecian empire, than to the ſtrength of the Perſians, and ſo effectually did the inteſtine broils, which aroſe chiefly on account of religion, weaken the kingdom of Perſia, that the moſt conſiderable part of it was annexed by the caliph Omar to his dominions.

As the Greeks and Perſians were then in a languiſhing ſituation, ſo the Arabs were ſtrong and flouriſhing. Their country had been peopled at the expence of the Grecian empire; whence the violent proceedings of the different religious ſectaries forced many to take refuge in Arabia. The Arabs were not only a populous nation, but unacquainted with the luxuries and delicacies of the Greeks and Perſians. They were inured to hardſhips of all kinds, and conſequently much better fitted than their effeminate neighbours to endure the fatigues of war, as the event very fully verified.

23 Mahomet's birth, deſcent, &c. Mahomet was born in the year of Chriſt, 569. According to the eaſtern hiſtorians, he was deſcended in a direct line from Iſhmael. Kedar, or, as the Arabians call him *Kidar*, after his father Iſhmael's death, communicated his name to the greateſt part of Arabia Petræa. He was ſucceeded in his authority and poſſeſſions by his ſon Hamal; Hamal by Nabat, and Nabat by Salaman. After Salaman came Al Homeiſa, then Al Yaſa, whoſe ſon Odad was ſucceeded by Odd the father of Adnan. Counting ten generations forward in the ſame line, we come at laſt to Fehr, who ſeems to

24 Fehr head of the Koreiſh. have diſtinguiſhed himſelf by ſome glorious actions, as he was denominated *Koreiſh*, on account of his bravery. He is to be conſidered as the root of the politeſt and moſt celebrated tribe of the Arabs. He had three ſons, Galeb, Mohareb, and Al Hareth. From Mohareb the Banu Mohareb, denominated likewiſe *Sheiban*, took their origin; from Al Hareth, the Banu Al Kholaj: and from Galeb in a direct line, the impoſtor Mahomet. Galeb was the father of Lowa; and he of Caab, whoſe ſon Morrah had for his immediate deſcendant Kelab the father of Koſa. It was this Koſa who aggrandized the tribe of the Koreiſh, by purchaſing the keys of the Caaba from Aba Gabſhan, as we have already related. By this he not only aggrandized his tribe, but became the prince of it himſelf. He was ſucceeded by his ſecond ſon Abd Menaf, to whom the *prophetic light*, which is ſaid to have manifeſted itſelf in his face, gave the right of primogeniture. Abd Menaf was ſucceeded by his ſon Amni, ſurnamed *Haſhem*, or "one that broke bread," on account of his ſingular generoſity during a famine at Mecca. Having amaſſed great ſums of money, he took a journey into Syria, where he purchaſed a vaſt quantity of meal, which he made into cakes, and divided with his own hands amongſt the people of Mecca. He likewiſe killed a prodigious number of camels, with which he fed them, and relieved them in the time of their diſtreſs; and finding that the ſoil about Mecca was ſo barren as to produce no fruits but what are common in the deſerts, and conſequently no corn or grain, which the Meccans are obliged to bring from other places, he appointed two caravans to ſet out yearly for that purpoſe, the one in ſummer, and the other in winter; by means of which the city was amply ſupplied with proviſions of all kinds. The proviſions brought by them, were diſtributed twice a-year; and Haſhem, by his prudent conduct, raiſed the glory of his people to the higheſt pitch; inſomuch, that all the neighbouring great men and heads of tribes made their court to him. Nay, ſo great veneration is the memory of Haſhem held in by the Arabs, that from him the family of Mahomet among them are called *Haſhemites*; and he who preſides over Mecca and Medina, who muſt always be of the race of Mahomet, has to this day the title of the "Chief or Prince of the Haſhemites.

Arabia. Hall's Gram. p. 3.

Haſhem died at Gaza in Syria, and was ſucceeded by his ſon Abdal Motalleb or Mateleb. He is ſaid to have been extremely affable and eaſy of acceſs, as well as juſt and generous to a great degree; ſo that, in the beginning of the month *Ramadan*, he entertained the poor upon the flat roof of his houſe, and afterwards ſupplied the fowls of the air and wild beaſts of the field with proviſions of various kinds, which he ordered his ſervants to leave upon the ſummits of the neighbouring mountains. The well which God ſhowed to Hagar in the wilderneſs is ſaid to have been miraculouſly diſcovered to Abdal Motalleb, about 500 years after it had been filled up by Amru prince of the Jorhamites. This well is by the Arabs called *Zemzem*; which ſome derive from her calling to Iſhmael, when ſhe ſpied it, in the Egyptian tongue, *Zem, Zem*, i. e. Stay, Stay; though others aſcribe it to a different origin. The water of this well, which is on the eaſt ſide of the Caaba, and covered with a ſmall building and cupola, is highly reverenced; being not only drank with particular devotion by the pilgrims, but alſo ſent in bottles as a great rarity to moſt parts of the Mahometan dominions.

26 Well Zemzem diſcovered by Abdal Motalleb.

Abdalla the father of Mahomet, was a younger ſon of

Arabia. of Abdal Motalleb, and remarkable for his beauty. In his 24th or 25th year, he married Amina, the daughter of Waheb, the ſon of Abdal Menaf. She is repreſented as the moſt beautiful, prudent, and virtuous lady of her tribe; and conſequently the moſt worthy of ſuch an extraordinary perſon as Abdalla. He died young, and, in his father's life-time, left his widow and infant ſon in very mean circumſtances; his whole ſubſtance conſiſting only of five camels and one female Ethiopian ſlave. Abdal Motalleb was, therefore, obliged to take care of his grandſon Mahomet; which he not only did during his life, but at his death enjoined his eldeſt ſon Abu Taleb to provide for him for the future. Abu Taleb was extremely kind to his nephew, and inſtructed him in the buſineſs of merchandiſe: for which purpoſe he took him into Syria when he was but 13 years of age, recommending him to Khadijah, a noble and rich widow, for her factor; in whoſe ſervice he behaved ſo well, that ſhe married him, and thus raiſed him to an equality with the richeſt in Mecca.

27 Mahomet at firſt a merchant.

28 Begins to broach his doctrine.

Though Mahomet had probably formed a deſign of introducing his new religion pretty early, he did not think proper to avow it till the 40th year of his age. The grand article of his faith was, the unity of the divine nature, which he pretended was violated by the Jews and Chriſtians no leſs than by the Pagans; for which reaſon, he reſolved to make an attempt to reſcue the world from the ignorance and ſuperſtition which prevailed at that time. This reformation he intended ſhould begin in his own family; and therefore, having retired with his houſehold to a cave in Mount Hara, near Mecca, he there opened the ſecret of his miſſion to Khadijah; acquainting her that the angel Gabriel had juſt appeared to him, and told him that he was appointed the Apoſtle of God. He alſo repeated to her a paſſage which he ſaid had been revealed to him by the miniſtry of the angel, with an account of many prodigies which happened at his birth. (See MAHOMET). This pretended revelation was received by Khadijah with the greateſt joy; and in a kind of ecſtaſy ſhe immediately communicated the good news to her couſin Waraka Ebn Nawfal, who, being a Chriſtian, could write in the Hebrew character, and was pretty well verſed in the Scriptures both of the Old and New Teſtament. He very readily came into her opinion, ſwore by God that what ſhe ſaid was true, and that "Mahomet was the great prophet foretold in the law by Moſes the ſon of Amram."

29 Converts his wife and couſin, &c.

Mahomet finding his firſt ſtep ſo ſucceſsful, as Waraka was a very conſiderable perſon, began to entertain great hopes of accompliſhing his deſign. He next converted his ſervant Zeid, to whom he gave his liberty on the occaſion, which afterwards became a rule to his followers; and then Ali the ſon of Abu Taleb, though at that time only nine or ten years of age. This laſt, however, making no account of the other two, he uſed to call *the firſt of believers*. The next perſon he applied to was Abu Becr, a man of very conſiderable authority among the Koreiſh. He was eaſily gained over, and by his influence ſeveral others; ſo that Mahomet now made his miſſion no longer a ſecret. To Abu Becr he gave the name of *Al Saddik*, or *the faithful witneſs*; becauſe he not only vouched for every thing he ſaid, but alſo greatly increaſed the number of his followers. Mahomet likewiſe complimented him with the title of *Atik*, or *preſerved*; intimating thereby that he was certainly ſaved from hell fire. Arabia.

Having given out that he was commanded from heaven to admoniſh his near relations, Mahomet directed Ali to prepare an entertainment, and invite to it the ſons and deſcendants of Abdal Motalleb. He intended to open his mind to them; but Abu Laheb, one of Mahomet's uncles, making the company break up before the prophet had an opportunity of ſpeaking to them, he was obliged to invite them again the next day. Having now propoſed the matter, he aſked which of them would become his wazir, prime miniſter, or vicegerent. This was accepted by Ali; upon which Mahomet ſaid to him, "This is my brother, my deputy, and my (*caliph*) ſucceſſor, or vicar; therefore ſhow yourſelves ſubmiſſive and obedient to him." At this ſpeech all the company fell a-laughing, telling Abu Taleb that he muſt now pay obedience and ſubmiſſion to his own ſon. Notwithſtanding this repulſe, however, Mahomet was ſo far from being diſcouraged, that he began to preach to the people in public. They heard him with ſome patience till he began to upbraid them with the idolatry, obſtinacy, and perverſeneſs of themſelves and their fathers; which ſo highly provoked them, that they openly declared themſelves his enemies, except ſome few who were converted. The prophet was now protected by the authority of his uncle Abu Taleb; who, however, was earneſtly ſolicited to perſuade his nephew to deſiſt, and at laſt threatened with an open rupture in caſe he could not prevail on him ſo to do. This had ſuch an effect upon Abu Taleb, that he adviſed his nephew not to puſh the matter any farther; repreſenting the great danger he and his followers would otherwiſe run: but our prophet was not to be ſo intimidated; and told his uncle plainly, that "if they ſet againſt him the ſun on his right hand, and the moon on his left, he would not abandon his enterpriſe." Abu Taleb, therefore, finding him ſo firmly reſolved, uſed no further arguments, but promiſed to ſtand by him to the utmoſt of his power: ſo that notwithſtanding the people of his tribe came to a determination to expel both Mahomet and his followers, he found a powerful ſupport in his uncle againſt all their machinations.

30 Rejected by the Koreiſh.

31 His reſolution.

Mahomet now entered upon his apoſtolic function with uncommon diligence and application; and ſoon gained over his uncle Hamza, and Omar Ebn Al Khattah, a perſon very much eſteemed, and who before had been his violent oppoſer. Notwithſtanding this ſucceſs, however, the Koreiſh continued their oppoſition, and came to a reſolution to proſcribe all who had embraced Mahomet's doctrine. In conſequence of this reſolution, the *Moſlems*, as his followers were called, were now treated with ſuch ſeverity, that they found it no longer ſafe to continue in Mecca; nay, ſeveral of them in the fifth year of his miſſion found themſelves obliged to fly into Ethiopia, where they were kindly received by the Najaſhi or king of that country, who refuſed to deliver them up to thoſe whom the Koreiſh ſent to demand them. At this refuſal they were ſo exaſperated, that they came to a reſolution to ſuppreſs effectually the new religion which had now made a conſiderable progreſs. In order to this, they entered into a ſolemn league or covenant againſt the Haſhemites,

32 His followers perſecuted.

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Hashemites, and the family of Abdal Motalleb in particular, engaging themselves to contract no marriages with them, nor to have any manner of communication with them otherwise; and, to give this the greater weight, they reduced it into writing, and laid it up in the Caaba. Upon this the tribe became divided into two factions; and all the family of Hashem, both Moslems and unbelievers, repaired to Abu Taleb as their head; except only Abdal Uzza, surnamed Abu Laheb, the son of Abdal Motalleb, who, out of hatred to his nephew and his doctrine, went over to the opposite party. After this the authority of Abu Taleb was scarce sufficient to protect Mahomet from the fury of the Koreish; who, according to Al Jannabi, made frequent attempts upon him; sometimes endeavouring to destroy him by force, at other times by secret wiles and machinations: nay, to compass their end, he tells us that they had recourse to magic, enchantments, and diabolical illusions. In short, they gave him at last so much trouble, that he was obliged to change his habitation, and seek a new asylum for himself and his companions. This he found in the house of one Orkam, which was advantageously situated on a hill called *Safa*. Here he converted Orkam's family, and the house was afterwards held in high estimation by the Moslems.

33 The Koreish enter into a league against him.

34 Their writing destroyed by a worm.

The two factions into which the tribe of Koreish was divided subsisted for five years, when they were put an end to by a very strange accident. Mahomet told his uncle Abu Taleb, that God had manifestly showed his disapprobation of the covenant entered into against them, by sending a worm to eat out every word of the instrument except the name of God. With this particular Abu Taleb immediately acquainted the Koreish; offering, in case it proved false, to deliver up his nephew to them; but if it should prove true, he insisted that they ought to lay aside their animosity, and annul the league they had made against the Hashemites. To this they acquiesced; and going to inspect the writings, found it to be as Abu Taleb had told them; the words "In thy name, O God," being the only ones which remained. On so remarkable a proof of the divine displeasure, the league was immediately annulled, and all the acts of hostility between the two parties ceased.

35 Mahomet still persecuted by the Koreish.

After this memorable event Mahomet remained with his uncle Abu Taleb, who survived the reconciliation only about eight months. The same year also died Khadijah, Mahomet's wife. Her death, as well as that of his uncle, proved a great detriment to his affairs; for the Koreish, notwithstanding the former reconciliation, began now to prosecute him with more violence than ever. He was therefore obliged to fly for shelter to Al Tayef; which he chose on account of its being the residence of his uncle Al Abbas, whose protection he imagined he would be able to secure. In this, however, he found himself mistaken: and though he staid a month in the city, during which time he gained over a few, yet at last the lower sort of people rose against him, and obliged him to return to Mecca. This refusal, though it greatly discouraged the new converts, did not in the least abate the zeal of Mahomet: on the contrary, he continued to preach boldly to the public assemblies at the pilgrimage to Mecca, exclaiming against idolatry, and particularly against the worship of two idols Allat and Al Uzzua, to which the tribes, especially the women of that of Thakif, were very much addicted. By this the prophet was often exposed to great danger: however, he gained many converts, and amongst them six of the inhabitants of Yathreb, of the Jewish tribe of Khazraj; who, on their return home, failed not to speak much in commendation of their new religion, and exhorted their fellow citizens immediately to embrace it. These converts of the tribe of Khazraj are by the Arab writers called *Al Ansar*, *Al Ansaria*, or *Ansars*; that is, helpers, protectors, &c. because they assisted and supported the prophet when he was persecuted by the Koreish of destruction. They first met Mahomet on a little hill called *Al Akabah*, where a temple stood, and where they first took an oath to exert themselves in support of their new apostle and his religion. An uninterrupted friendship and harmony reigned for a long time amongst the members of the Jewish tribes of Khazraj, Koreitha, and Nadir, whose great progenitor, say the Arabs, was Aaron the son of Amram. Mahomet therefore insinuating himself into the good graces of the Ansars, they readily embraced his religion, and proved of very considerable service.

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The next remarkable thing recorded of Mahomet is the invention of his night journey to heaven. This he probably intended to supply the place of miracles. The absurdities contained in that relation, however, are so great, that when he related it to his uncle Al Abbas, and Omm Hana the daughter of Abu Taleb, they endeavoured to dissuade him from making it public. This advice he was so far from following, that he related the whole to Abu Jahl, one of his most inveterate enemies, who ridiculed him for it, and placed the story in such a ridiculous light to the Koreish, that they were on the point of insulting him; several of his followers also left him; and the whole design had probably been ruined, had not Abu Beer vouched for his veracity, and declared, that, if Mahomet affirmed it to be true, he firmly believed the whole. This declaration not only retrieved the prophet's credit, but increased it to such a degree, that he was sure of making his disciples swallow whatever he pleased; and on this occasion it is said by some that he gave Abu Beer the name of the *faithful witness*, as we have already related.

Mahomet's

38 almost proves the ruin of his

In the twelfth year of Mahomet's mission, twelve men of Yathreb, or Medina, of whom ten were of the tribe of Kharaj, and two of that of Aws, came to Mecca, and took an oath of fidelity to the prophet at the hill Al Akabah. When they had solemnly engaged to do all required of them, Mahomet sent one of his disciples, named *Mafab Ebn Omair*, home with them, to instruct them more fully in the grounds of their new religion. Mafab being arrived at Medina, with the assistance of the new proselytes, gained several others; and acquainting Mahomet with the success of his mission, desired leave to form a congregation of Moslems at Medina. This the prophet readily granted: in consequence of which, the new Moslems regularly assembled, to the number of forty persons, in the house of Saad Ebn Khaithama. The next year Mafab returned to Mecca, accompanied by 73 men and two women of Medina, who had professed Mahometanism, besides several others who were yet unbelievers. On their arrival they sent immediately to Mahomet, and offered

tion of Moslems formed at Medina.

Arabia. offered him their aſſiſtance, of which he now ſtood in the greateſt need; for his adverſaries were by this time grown ſo powerful in Mecca, that he could not ſtay there much longer without imminent danger. He therefore accepted their propoſal, and met them one night by appointment at the hill Al Akabah. At this interview he was attended by his uncle Al Abbas; who, though then an unbeliever, wiſhed his nephew well, and made a ſpeech to the people of Medina; wherein he told them, that as Mahomet was obliged to quit his native city and ſeek an aſylum elſewhere, and as they had offered him their protection, they would do well not to deceive him; and if they were not firmly reſolved to defend, and not to betray him, they had better declare their minds, and let him ſeek for protection ſomewhere elſe. Upon their proteſting their ſincerity, Mahomet ſwore to be faithful to them, a part of the Koran being read to all preſent, on condition they ſhould protect him againſt all inſults, as heartily as they would do their own wives and families. They then aſked him what recompenſe they were to expect if they ſhould happen to be killed in his quarrel: he anſwered, Paradiſe; upon which they pledged their faith to him, after Mahomet had choſen twelve out of their number, who were to have the ſame authority under him that the twelve apoſtles had under Chriſt.

Finding now a confederacy formed in his favour, our prophet began to pull off the maſk as to his true ſentiments concerning the means of reformation. Hitherto he had propagated his religion by fair means only; and in ſeveral paſſages of the Koran, which he pretended were revealed before this time, he declared, that his buſineſs was only to preach and admoniſh; that he had no authority to compel any perſon; and that whether they believed or not, was none of his concern, but belonged ſolely to God. But no ſooner did he find himſelf enabled, by the alliance above mentioned, to reſiſt his enemies, than he gave out that God had allowed him and his followers to defend themſelves; and at length, as his forces increaſed, he pretended not only to have leave to act on the defenſive, but to attack the infidels, deſtroy idolatry, and ſet up the true religion by the power of the ſword. To this he was excited by an apprehenſion that pacific meaſures would greatly retard, if not entirely overthrow, his deſigns; and therefore he determined to uſe the moſt violent methods to convert the Pagan Arabs, or rather to extend his own authority.

40 The Koreiſh reſolve to put Mahomet to death.

The Koreiſh, in the mean time, finding that Mahomet had conſiderably extended his influence, and hearing of the league concluded with the Anſars, began to think it abſolutely neceſſary that he ſhould be prevented from eſcaping to Medina; and, in order to do this the more effectually, they reſolved in a council, wherein it is ſaid the devil aſſiſted in perſon, to put an end to his life. To accompliſh this with the greater ſafety, they agreed that a man ſhould be choſen out of every tribe, and that each ſhould have a blow at him; that ſo the guilt of his death might fall equally on all the tribes; and thus the Haſhemites would be prevented from attempting to revenge the death of their kinſman, as they were much inferior in power to the reſt of the tribes put together. Mahomet now directed his companions to repair to Medina, where, in conſequence of the late treaty, they might be aſſured of protection. Arabia. This they accordingly did: but he himſelf, with Abu Becr and Ali, remained behind; not having received, as he pretended, the divine permiſſion to retire. Here he narrowly watched the motions of the Koreiſh, and was ſoon apprized of their machinations: for the above-mentioned conſpiracy was ſcarce formed, when by ſome means or other it came to Mahomet's knowledge; and he gave out that it was revealed to him by the angel Gabriel, who alſo commanded him to retire from Mecca. The conſpirators were already aſſembled at the prophet's door; but he, to amuſe them, ordered Ali to lie down in his place, and wrap himſelf in his green cloak: this Ali complied with, and Mahomet miraculouſly, according to the Arabs, eſcaped to the houſe of Abu Becr. The conſpirators, in the mean time, perceiving through a crevice Ali wrapped up in the green cloak, took him for Mahomet himſelf, and watched there till morning, when Ali aroſe, and they found themſelves deceived. The prophet next retired in company with Abu Becr to a cave in Mount Thur, a hill a little ſouth of Mecca. Here he had a ſtill more narrow eſcape; concerning which we have the following account from an Arabic tradition. "The Koreiſh having detached a party from Mecca to reconnoitre the mouth of the cave, when they came there, found it covered by a ſpider's web, and a neſt built at the entrance by two pigeons, which they ſaw, and which had laid two eggs therein. On ſight of this they reaſoned with themſelves in the following manner: 'If any perſon had lately entered this cavern, the eggs now before us would infallibly have been broken, and the ſpider's web demoliſhed; there can therefore be nobody in it:' after which they immediately retired. As the prophet, therefore, and his friend, were now ſaved ſo miraculouſly by means of the pigeon's eggs and the interpoſition of the ſpider's web, he afterwards enjoined his followers, in memory of ſo remarkable an event, to look upon pigeons as a kind of ſacred animals, and never to kill a ſpider."

41 He outwits them and eſcapes.

42 In great danger at Mount Thur.

The prophet and Abu Becr having ſtaid in this cave three days in order to recover a little from their conſternation, ſet out for Medina; but the Koreiſh, being informed of the route they had taken, ſent a party after them, under the command of Soraka Ebn Malec. Theſe overtook them; and, as the Arab hiſtorians tell us, Soraka's horſe fell down when he attempted to ſeize Mahomet. Upon this he recommended himſelf to the prophet's prayers, and remounted his horſe without hurt: but, as he ſtill continued the purſuit, his horſe fell down with him a ſecond time; upon which he returned to Mecca, without offering any farther violence: and Mahomet, thus happily delivered from the greateſt dangers, arrived without farther moleſtation at Medina, where he was received with the greateſt demonſtrations of joy.—This flight of the prophet from Mecca to Medina was reckoned ſo remarkable by the Moſlems, that they made it the era from whence all their remarkable tranſactions were dated, calling it the *Era of the Hegira*, or *flight*. The beginning of the Hegira correſponded with the 16th of July, A. D. 622.

43 He is purſued and overtaken, but ſtill eſcapes.

44 Era of the Hegira.

On Mahomet's arrival at Mecca, his firſt care was to build a moſque for his religious worſhip, and a houſe for himſelf. The city of Medina at that time was inhabited

Arabia. habited partly by Jews and partly by heretical Chriſtians, that formed two factions which perſecuted one another with great violence. This gave the impoſtor ſuch an opportunity of propagating his new religion, that in a ſhort time the city was entirely at his devotion. Here he ſtrengthened himſelf by marrying Ayeſha the daughter of Abu Becr, though then only ſeven years of age, and gave his own daughter Fatima in marriage to Ali, the ſon of Abu Taleb. The next point he had in view was the union of the Mohajerin, or thoſe who fled from Mecca on account of their religion, with the Anſars above mentioned. To facilitate this, after his moſque and houſe were finiſhed, he eſtabliſhed among the Moſlems a fraternity, the principal ſtatute of which was, that they ſhould not only treat one another like brethren, but likewiſe moſt cordially love and mutually cheriſh one another to the utmoſt of their power. But leſt even this ſhould prove inſufficient, he coupled the individuals of the two bodies of Anſars and Mohajerin; and this was the laſt tranſaction of the firſt year of the Hegira.

45 Union of the Anſars and Mohajerin.

The next year was uſhered in, according to Abulfeda, with a change of the *Kebla*, or place whither the Mahometans were to turn their faces in prayer. At firſt it had been declared to be perfectly indifferent where they turned their faces. Afterwards he directed them to pray with their faces towards the temple of Jeruſalem, probably with a view to ingratiate himſelf with the Jews; and now, in order to gain the Pagan Arabs, he ordered his followers to pray with their faces towards the eaſt. This inconſtancy gave great offence, and occaſioned the apoſtacy of many of his diſciples. About this time Mahomet receiving advice that a rich caravan of the Koreiſh was on the road from Syria to Mecca, he detached his uncle Hamza, at the head of 30 horſe, to ſeize upon it; who accordingly lay in wait for it in one of the woods of Yamama, through which it was to paſs: here, however, he was informed that the caravan was guarded by 300 men, ſo that he returned without making any attempt; but the prophet made the proper diſpoſitions for acting hereafter againſt the Koreiſh with ſucceſs. This year alſo Mahomet ſent out a party of 60 or 80 horſe, all Mohajerin, except one who was an Anſar, to make repriſals on the Koreiſh. They were met by a party of their enemies, and both ſides immediately prepared for an engagement: however, they parted without bloodſhed, except one of the Koreiſh, who was killed by an arrow ſhot by one of the Moſlems.

46 Mahomet takes a caravan, and gains the battle of Bedr.

Mahomet having now put himſelf into an offenſive poſture, began in earneſt to make repriſals on the Koreiſh. His firſt exploit was the taking of a caravan attended by a ſmall guard; and this being accompliſhed by a party conſiſting only of nine men, contributed greatly to encourage the Moſlems. But what moſt eſtabliſhed the impoſtor's affairs, and was indeed the true foundation of all his future greatneſs, was his gaining the battle of *Bedr*; of which we have the following account.—The prophet being informed that Abu Sofian Ebn Harb eſcorted a caravan of the Koreiſh with only 30 or 40 men, reſolved to advance at the head of a ſmall detachment of his troops to intercept it. To this he was excited by the riches of the caravan, which conſiſted of a large quantity of merchandiſe, conſiſting of the riches of Syria, carried on the backs of a thouſand camels. He therefore ſent out a party to reconnoitre it, with orders to wait in ſome convenient place where they might remain undiſcovered. But Abu Sofian having notice of Mahomet's motions, diſpatched a courier to Mecca, requeſting ſuccours from his countrymen, that he might be able to defend the caravan. Upon this Mahomet drew together all his force, which amounted to no more than 313, while his enemies conſiſted of very near 1000, Abu Sofian having been reinforced by the Meccans with 950 men. The two armies did not long remain in a ſtate of inaction: but before the battle three champions from each party engaged each other in ſingle combat. In this the Moſlem champions were victorious, and the event greatly diſcouraged the Koreiſh. Mahomet, in the mean time, taking advantage of this lucky event, offered up his prayers to God with great fervency and vehemence; after which, feigning himſelf in a trance, he pretended that God had aſſured him of victory. Then throwing an handful of duſt or gravel towards the enemy, he cried out, "May the faces of them be confounded;" and attacked the Koreiſh with ſuch bravery, that they were ſoon put to flight, leaving 70 dead on the ſpot, and having as many taken priſoners. The loſs on Mahomet's ſide was only 14 men, and among the priſoners was Al Abbas, the prophet's uncle.

Though this action may ſeem of little conſequence in itſelf, it was of very great advantage to Mahomet's affairs at that time. He was immediately treated with the higheſt reſpect by the Najaſhi, or king of Ethiopia, who received a particular account of the victory ſoon after it was gained; while the ſuperſtitious Moſlems did not fail to look upon it as an evident declaration of heaven in their favour. Nay, notwithſtanding the ſmall number of enemies to be overcome, and who were only mortal men, theſe ignorant bigots did not heſitate to own the aſſiſtance of no leſs than 4000 angels, who, according to them, rode on black and white horſes, having on their heads white and yellow faſhes, that hung down between their ſhoulders.

Notwithſtanding this diſaſter, however, Abu Sofian made a pretty good retreat, and conducted the greateſt part of the caravan to Mecca. This chagrined the Moſlems, though they found great ſpoil on the field of battle; the diviſion of which had likely to have proved fatal to their cauſe, by the quarrels that it occaſioned among them. So violent, indeed, were the diſputes on this occaſion, that the impoſtor was obliged to pretend an immediate revelation from heaven, empowering him to retain a fifth part for religious purpoſes, and to diſtribute the reſt equally. This became a law for his ſucceſſors; but, with regard to himſelf the prophet often took the liberty of infringing it; for which, no doubt, a new revelation was always a ready and convenient ſalvo. As for thoſe who were ſlain on Mahomet's part in this battle, they were all looked upon by the Moſlems as martyrs; and the prophet perceiving among the priſoners two of his inveterate enemies, immediately cauſed their heads to be ſtruck off.

47 His law concerning the diviſion of ſpoils

The Koreiſh, in order to be revenged on Mahomet for their late defeat at Bedr, ſent Amru Ebn Al As, who afterwards conquered Egypt, with ſome other of their principal people, on an embaſſy to the king of Ethiopia,

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Ethiopia, in order to intereſt him in their quarrel. To do this the more effectually, they accuſed Mahomet and his followers of ſpeaking diſreſpectfully of JESUS and his mother MARY; which accuſation they hoped would likewiſe induce him to deliver up the Moſlem refugees that were then at his court. But the bad ſucceſs that had attended the arms of the Koreiſh hitherto, joined to the excuſes made by the refugees, not only hindered the Najaſhi from delivering them up, but alſo prompted him to diſmiſs the ambaſſadors, and return the preſents they had brought him. In the mean time, Abu Sofian, who had ſworn never to uſe perfumes or enjoy women till he had another battle with Mahomet, ſet out from Mecca with a body of 200 horſe. He advanced to a poſt within three miles of Medina; from whence he ſent a detachment, who burnt a barn, together with a man in it that was winnowing wheat. Mahomet being informed of this outrage, moved immediately towards him with a detachment of cavalry; but Abu Sofian was ſo intimidated by his approach, that he fled with precipitation, leaving behind him all the ſacks of flour or meal that had been brought for the ſubſiſtence of his troops. Inſtead therefore of coming to an engagement with the impoſtor, as he had ſworn, he contented himſelf with alarming the country, and pillaging ſuch as he ſuſpected of favouring Mahometaniſm.—This year alſo Mahomet conquered the tribes called *Banu Solaim*, *Ghatfan*, and the *Banu Kainoka*; plundering likewiſe a rich caravan belonging to the Koreiſh, and acquiring from thence 25,000 dirhems for his own ſhare of the plunder.

48 Abu Sofian's cowardice.

In the year of Chriſt 625, being the third of the Hegira, the Koreiſh aſſembled an army of 3000 men, among whom were 200 horſe and 700 armed with coats of mail. The command of his army was given to Abu Sofian, who was attended by his wife Henda Bint Otba, and ſat down at a village about ſix miles diſtant from Medina. Mahomet being much inferior to the enemy, reſolved at firſt to keep himſelf within the town, and receive them there; but afterwards, by the advice of his companions, marched out againſt them at the head of 1000 according to ſome, 1050 according to others, or, as ſome ſay, only 900 men. Of theſe 200 were cuiraſſiers; but he had only one horſe beſides his own in the whole army. He diſtributed three ſtandards among his troops; of which one was given to the tribe of Aws, another to that of Khazraj, and the third to the Mohajerin. The grand ſtandard was carried before the prophet by Moſaab Ebn Omair. With theſe forces Mahomet formed a camp in a village near Ohod, a mountain about four miles north of Medina, which he contrived to have on his back: and the better to ſecure his men from being ſurrounded, he placed 50 archers, the flower of his troops, in the rear, with ſtrict orders not to quit their poſt. On the other hand, the army of the Koreiſh was drawn up in the form of a creſcent, and made a very good appearance. The right wing was commanded by Khaled Ebn Al Walid, afterwards ſo terrible to the Greeks; the left by Acrema Ebn Abu Jahl; and the centre by Abu Sofian. The corps de reſerve was headed by Abu Sofian's wife, accompained by 15 other matrons, who performed the office of drummers,

49 Battle of Ohod.

lamenting the fate of their countrymen ſlain at Bedr, in order to animate the troops who attended them. The attack was begun by the Moſlems, who fell upon the enemy with ſuch fury, that their centre immediately began to give way. Ali, or, according to Abulfeda, Hamza, ſlew Arta the enemy's great ſtandard-bearer; which ſtruck them with ſuch terror, that they ſoon betook themſelves to flight, falling foul upon their own corps de reſerve. Victory had now been no longer doubtful, notwithſtanding the vaſt inferiority of Mahomet's troops, had not the 50 archers, contrary to the prophet's expreſs command, quitted their poſt to pillage the enemy. Upon this Khaled, perceiving the Moſlem army to be greatly expoſed, attacked them in the rear with ſuch bravery, that he turned the fortune of the day. Not content with putting the troops there in diſorder, he cried out with all his might, "Mahomet is ſlain;" and this had ſuch an effect upon the Moſlems, that they immediately took to their heels, nor could the utmoſt endeavours of the prophet himſelf afterwards rally them. He therefore found himſelf obliged to quit the field of battle; in doing which he was very near loſing his life, being ſtruck down by a ſhower of ſtones, and wounded in the face by two arrows, which occaſioned the loſs of two of his fore-teeth. He likewiſe received a contuſion on his upper lip; and had even been killed on the ſpot, had not one of his companions, named *Telha*, Abu Becr's nephew, received a blow that was levelled at him. On this occaſion Telha received a wound in his hand, which deprived him ever after of the uſe of ſome of his fingers. Of the Moſlems 70 were ſlain; among whom were Hamza the prophet's uncle, and Moſaab the ſtandard-bearer. Amongſt the wounded were Abu Becr, Omar, and Othman; but as ſoon as they underſtood that the prophet was ſafe, they returned to the charge with a conſiderable body, and, after an obſtinate diſpute, carried him off. The good retreat made by theſe champions ſo diſcouraged the troops of Abu Sofian, that they did not purſue the flying enemy, but contented themſelves with remaining maſters of the field of battle; nor did that general, though he exulted not a little in his victory, make any further uſe of it than to give Mahomet a challenge to meet him the next year at Bedr, which was accepted; and after his return to Mecca, he deſired a truce with the Moſlems, which was readily granted.

50 Mahomet defeated.

This defeat had like to have proved the total ruin of the impoſtor's affairs, and muſt inevitably have done ſo had the conquerors made the leaſt uſe of their victory. Some of his followers now aſſerted, that had he been really a prophet ſent from God, he could not have been thus defeated: and others were exaſperated on account of the loſs of their friends and relations who had been ſlain in the late engagement. To ſtill the murmurs of the former, he laid the blame on the ſins of the thoſe who had accompanied him; and, to pacify the latter he pretended a revelation from heaven, wherein the period of all men's lives was ſaid to be unalterably fixed without regard to their own actions, or to any external objects; ſo that thoſe who were killed in battle behoved to have died, though they had remained at home in their own houſes. By the aſſiſtance of this laſt doctrine he encouraged his followers to fight, with-

51 He apologizes for his defeat.

out

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out fear, for the propagation of their faith, as all their caution would not be ſufficient to avert their deſtiny, or prolong their lives even for a ſingle moment.

The next year, (A. D. 626), Mahomet, beſides ſeveral other leſs conſiderable ſucceſſes, reduced a fortreſs belonging to the Jewiſh tribe of Al Nadir, who had revolted on account of the defeat at Ohod. On this occaſion, by an expreſs revelation, as he pretended, he kept the whole booty to himſelf: and, about the ſame time, forbade his followers the uſe of wine, or to play at games of chance, on account of the diſturbances and quarrels which were likely to be excited by that means among them. This year alſo he marched with a body of infantry to Bedr, to meet Abu Sofian, as he had promiſed the year before: but that general's heart failing him, he returned home without facing the prophet; and this piece of cowardice the Moſlems did not fail to impute to a terror ſent immediately from God. The year following, however, the Koreiſh, in conjunction with the tribe of Ghatfan, and the Jews of Al Nadir and Koreidha, aſſembled an army of 12,000 men, with which they formed the ſiege of Medina; thus threatening the impoſtor and all his followers with utter deſtruction at once. On the enemy's approach, Mahomet, by the advice of a Perſian named *Salman*, ordered a deep ditch to be dug round the city, and went out to defend it with 3000 men. The Arabs having inveſted the town, both ſides remained in a ſtate of inactivity for ſome time; which was ſo well employed by the impoſtor, that he found means to corrupt ſome of the leading men in the enemy's camp. The good effects of this ſoon appeared; for a champion having advanced to the Moſlem intrenchments, and challenged the beſt man in their army to fight him in ſingle combat, the challenge was immediately accepted by Ali, who ſlew him and another that came to his aſſiſtance; after which, thoſe who had been corrupted by Mahomet's agents ſo ſoured a conſiderable part of the forces, that they deſerted their camp; upon which all the reſt were obliged to raiſe the ſiege and return home.

52 Siege of Medina.

53 The ſiege raiſed.

The prophet, being now happily delivered from the moſt powerful combination that had ever been formed againſt him, was viſited by the angel Gabriel; who aſked him, whether he had ſuffered his men to lay down their arms, when the angels had not laid down theirs? ordering him at the ſame time to go immediately againſt the tribe of Koreidha, and aſſuring him that he himſelf would lead the way. Upon this Mahomet immediately ſet out for the fortreſs of the Koreidhites, and puſhed on the ſiege with ſo much vigour, that, though it was deemed impregnable, he obliged the garriſon to capitulate in 25 days. The Koreidhites, not daring to truſt themſelves to the impoſtor's mercy, ſurrendered at diſcretion to Saad Ebn Moadh, prince of the tribe of Aws, hoping that he, being one of their old friends and confederates, would have ſome regard for them. Here, however, they found themſelves diſappointed; for Saad, being highly provoked at them for aſſiſting the Koreiſh while in league with Mahomet, ordered the men to be put to the ſword, the women and children made ſlaves, and their goods divided among the Moſlems. This ſentence was no ſooner heard by Mahomet, than he cried out that Saad had pronounced the ſentence of God; and, in conſequence of this deciſion, ordered the men, to the number of 600 or 700, to be immediately maſſacred. The women and children were alſo carried into captivity. Their immoveable poſſeſſions were given to the Mohajerin, and the goods divided equally.

54 Kharedi lines maſſacred.

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Mahomet now continued to be ſucceſsful, gradually reducing the Arab tribes one after another. In 628, he ſent an agent to Conſtantinople, deſiring leave of the Greek emperor to trade with his ſubjects; which was immediately granted. The ſame year alſo he concluded a peace for ten years with the inhabitants of Mecca, and obtained liberty the next year to perform his devotions at the Caaba. What tended conſiderably to bring about this pacification was an account brought to the Koreiſh by one whom they had ſent with an actual defiance to Mahomet, of the prodigious veneration which his followers had for him. This meſſenger acquainted them that he had been at the courts both of the Roman emperors and of the kings of Perſia, but never ſaw any prince ſo highly reſpected as Mahomet was by his companions. Whenever he made the ablution, in order to ſay his prayers, they ran and caught the water which he had uſed; whenever he ſpit, they licked it up, and gathered up every hair that fell from him, with great veneration. This intimated how deſperately they would fight in his defence, and probably inclined his enemies to avoid hoſtilities. In 629, the impoſtor began to think of propagating his religion beyond the bounds of Arabia, and ſent meſſengers to ſeveral neighbouring princes to invite them to embrace Mahometaniſm; but, before ſending the letters, he cauſed a ſilver ſeal to be made, on which were engraved in three lines the following words, "MAHOMET THE APOSTLE OF GOD." This ſeal he believed would procure the letters to which it was affixed a more favourable reception at the courts of thoſe princes whither they were directed. The firſt to whom he applied was Khoſru Parvis the king of Perſia; but he, finding that Mahomet had put his own name before his, tore the letter in pieces, and ſent away the meſſenger very abruptly. He alſo ſent a letter to the ſame purpoſe to Conſtantinople; but though the emperor Heraclius diſmiſſed his meſſengers honourably, he refuſed to abandon the Chriſtian faith. Beſides theſe, he wrote five other letters, which he diſtributed among thoſe who he thought would be moſt likely to acknowledge him for an apoſtle. However, we do not hear that by means of letters he ever introduced his religion into a foreign country.—

55 Prodigious veneration for Mahomet.

56 H. ſends foreign princes to embrace his religion.

But while our impoſtor was thus going on in the full career of ſucceſs, and induſtriouſly propagating his infamous falſehoods by all the means he could think of, he was poiſoned by a maid, who wanted, as ſhe ſaid, to make an experiment whether he was a prophet or not. This was done by communicating ſome poiſon to a ſhoulder of mutton, of which one of his companions, named *Baſhar Ebn Al Bara*, eating heartily, died upon the ſpot; and Mahomet himſelf, though he recovered a little, and lived three years after, yet never enjoyed perfect health. Notwithſtanding this misfortune, however, he ſtill continued his enterpriſes. The year 630 proved remarkably fortunate. It was uſhered in by the converſion of Khaled Ebn Al Walid, Amru Ebn Al As, and Othman Ebn Telha, three of the moſt conſiderable perſons among the Koreiſh; and this ſoon enabled him to become maſter of the whole peninſula of Arabia. This year alſo the inhabitants of Mecca

57 Is poiſoned but recovers.

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took it into their heads to violate the treaty concluded with Mahomet: for the tribe of Becr, who were the confederates of the Koreith, attacking thoſe of Khozaab, who were in alliance with Mahomet, maſſacred 20 of them, and afterwards retired; being ſupported in this action by a party of the Koreiſh themſelves.—The conſequence of this violation was ſoon apprehended; and Abu Sofian himſelf made a journey to Medina, in order to heal the breach and renew the truce: but in vain; for Mahomet, glad of this opportunity, refuſed to ſee him. Upon this he applied to Abu Becr, Ali, Omar, and Fatima, to intercede for their countrymen with the prophet; but ſome of theſe giving him rough anſwers, and others none at all, he was obliged to return to Mecca as he came. Mahomet immediately gave orders for the neceſſary preparations, that he might ſurpriſe the Meccans, who were by no means in a condition to receive him; but Hateb Ebn Abu Baltaa, hitherto a faithful Moſlem, attempted to give them notice of their danger by a letter; though without effect. His letter was intercepted: and he alleged in his excuſe, that the only reaſon he had for his conduct was to induce the Koreiſh to treat his family with kindneſs. This excuſe the prophet accepted, as he had greatly diſtinguiſhed himſelf at the battle of Bedr, but ſtrictly forbade any ſuch practices for the future; which having done, he immediately made the neceſſary diſpoſitions for ſetting forward.

58 Meccans violate the treaty with Mahomet.

Mahomet's army, on this occaſion, was compoſed of Mohajerin, Anſars, and other Arabs, who had lately become proſelytes. As they drew near to Mecca, he ſet up his ſtandards, and advanced in order of battle to Mar Al Dharan, a place about four paraſangs from Mecca, where the whole army encamped. Here he ordered 10,000 fires to be lighted, and committed the defence of the camp to Omar, who cut off all communication with the town, ſo that the Meccans could receive no certain advice of their approach. Among others that came from Mecca to reconnoitre the Moſlem camp, Abu Sofian Ebn Harb, Hakim Ebn Hezam, and Bodail Ebn Warka, fell into Omar's hands; and being conducted to Mohamet, were obliged to embrace Mahometaniſm in order to ſave their lives.

The firſt rumour of this expedition had not a little terrified the Koreiſh, though they were not appriſed that the prophet had reſolved upon a war; but perceiving now, upon the report of Abu Sofian, who had been ſent back to them, that the enemy was at their gates, they were thrown into the utmoſt conſternation. Of this Mahomet being informed, he reſolved to take advantage of the confuſion that then reigned among them. He therefore firſt deſpatched Hakem and Bodail to the Meccans, inviting them to take an oath of allegiance to him, and become converts to his new religion; after which, he made the following diſpoſition of his forces. Al Zobeir was ordered to advance with a detachment toward the town on the ſide of Mount Cada. Saad Ebn Obad, prince of the tribe Khazraj, marched by his order with another detachment towards the height of Coba, which commands the plain of Mecca. Ali commanded the left wing of the army, conſiſting of Anſars and Mohajerin. The prophet put into his hands the great ſtandard of Mahometaniſm, with orders to poſt himſelf upon Mount Al Hajun, and to plant the ſtandard there; ſtrictly enjoining him, however, not to ſtir from thence till he himſelf arrived, and till a proper ſignal ſhould be given him from Saad for that purpoſe. Khaled led the right wing, conſiſting of the Arabs lately converted, with which he was to poſſeſs himſelf of the plain of Mecca. Abu Obeidah commanded in the centre, which conſiſted entirely of infantry; the prophet himſelf remained in the rear, from whence he could moſt eaſily deſpatch his orders to all the generals as occaſion ſhould require. He expreſsly prohibited Khaled and all his other officers from acting offenſively unleſs they were firſt attacked. Things being in this ſituation, the army upon a ſignal given put itſelf immediately in motion. The prophet mounted his camel with great alacrity, and was that day clothed in red. Al Zobeir purſued the route aſſigned him without oppoſition; nor did Saad diſcover the fainteſt traces of an enemy: Ali took poſſeſſion of his poſt without the loſs of a man; and in like manner Abu Obeidah ſeized on the ſuburbs. Khaled, however, in his march to the plain, was met by a large body of the Koreiſh and their confederates, whom he immediately attacked and defeated, putting 28 of them to the ſword. Not content with this, he purſued them into the town, and maſſacred a great number of the inhabitants; which ſo terrified the reſt, that ſome ſhut themſelves up in their houſes, while others fled different ways in order to avoid the fury of the mercileſs and impious tyrant, who was now become maſter of the city. Thus was Mecca reduced, with the loſs only of two men on the ſide of the impoſtor.

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59 Mecca taken.

Mahomet being now maſter of the city, made his public entry into it exactly at ſunriſing. When the firſt tumult was over, he went in proceſſion round the Caaba ſeven times, touching the corner of the black ſtone with the ſtaff in his hand, as often as he paſſed it, with great devotion. Then he entered the Caaba; where obſerving ſeveral idols in the form of angels, and the ſtatues of Abraham and Iſhmael with the arrows of divination in their hands, he cauſed them all to be deſtroyed. He alſo broke in pieces with his own hands a wooden pigeon, that had long been eſteemed a deity by the idolatrous Koreiſh. Afterwards entering into the interior part of the Caaba, he repeated with a loud voice the form uſed at this day by the Mahometans, "Allah Akbar, God is great," &c. turning towards every part of the temple. Then he prayed between the two pillars there, with two inclinations, as well as without the Caaba; ſaying to thoſe that attended him, "This is your Kebla, or the place towards which you are to turn your faces in prayer."

Having thus effectually ſubdued the Koreiſh, put an end to all commotions, and purged the Caaba of 360 idols, the prophet's next care was to ingratiate himſelf with the people. Sending therefore for ſome of the principal of them, he aſked them what kind of treatment they expected from him, now he had conquered them? To this they replied, "None but what is favourable, O generous brother:" upon which he diſmiſſed them, telling them they were from that moment a free people. After this, pretending a new revelation, he reſtored the keys of the Caaba to Othman Ebn Telha, who was in poſſeſſion of them before; and who was now ſo much affected by this piece of juſtice, that he immediately became a proſelyte. Next day the prophet declared Mecca an aſylum, and publicly

gave

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gave out that he would maintain to the utmoſt of his power the inviolable ſecurity of the place. He then was ſolemnly inaugurated; after which he proſcribed, according to ſome, ſix men and four women, according to others, eleven men and one woman: but of theſe only three men and one woman were put to death; the reſt being pardoned on their embracing Mahometaniſm, and one woman making her eſcape. The remainder of this year was ſpent in various expeditions againſt different tribes of the Arabs, which were in general attended with ſucceſs.

The 9th year of the Hegira, being that of Chriſt 631, is called by the Mahometants the year of *Embaſſies*; for the Arabs, who had hitherto been expecting the iſſue of the war between Mahomet and the Koreiſh, no ſooner ſaw that tribe, which was the moſt conſiderable of the whole, ſubmit to him, than they began to come in to him in great numbers, and to ſend embaſſies to make their ſubmiſſions to him, both while at Mecca and after his return to Medina, whither he had returned ſoon after the taking of Mecca: and this good fortune continued without interruption to the year 632, when the famous impoſtor breathed his laſt, having juſt reduced under his ſubjection the whole peninſula of Arabia, and being ready to break into the neighbouring kingdoms in order to ſatisfy his ambition.

60 Mahomet dies.

61 Great confuſion on his death.

The death of Mahomet occaſioned ſuch a conſternation in Mecca, that the governor hid himſelf, fearing to be called to an account for his former conduct; and the inhabitants, upon the firſt arrival of this melancholy news, conſidered themſelves as deſtitute of all manner of protection. After the firſt impreſſions of their fear, however, were over, they began to meditate a revolt; but were prevented by one Sohail Ebn Amru, a principal man of the Koreiſh. The tumults at Medina, however, were not ſo eaſily appeaſed. The news of this ſad event were no ſooner publiſhed there, than a number of people aſſembled before his door, crying out, "How can our apoſtle be dead! Our interceſſor, our mediator has not entirely left us! He is taken up into heaven, as was Iſa (Jeſus); therefore he ſhall not be buried." This was confirmed by Omar; who drew his ſword, and ſwore, that if any perſon affirmed Mahomet to be dead, he would cut off his hands and his feet. "The apoſtle of God (ſays he) is not dead: he is only gone for a ſeaſon, as Moſes the ſon of Amram was gone from the people of Iſrael for 40 days, and then returned to them again." The populace therefore kept the body above ground, even after the belly began to ſwell; nor could the prophet's uncle Al Abbas, notwithſtanding this, convince them to the contrary. Upon hearing of theſe tranſactions, Abu Becr immediately poſted from Al Sonah, another quarter of the city, and expoſtulated with them in the following manner: "Do you worſhip Mahomet, or the god of Mahomet? If the latter, he is immortal, and liveth for ever; but if the former, you are in a manifeſt error, for he is certainly dead." The truth of this aſſertion he immediately evinced from ſeveral paſſages of the Koran, in ſo clear and concluſive a manner, that he not only ſatisfied Omar, but calmed the minds of all the people.

The prophet having left no directions concerning a ſucceſſor, very warm diſputes aroſe between the Mohajerin and the Anſars about the right of electing a caliph. The former inſiſted on having that right, becauſe they had attended Mahomet in his flight to Medina; and the others, becauſe they had ſupported him when expelled from his native city, &c. In ſhort, the diſputes became ſo hot, that an open rupture muſt have commenced, had not they been terminated by a propoſal that each party ſhould chooſe a caliph. This amuſed them a little for the preſent; but not proving perfectly agreeable to the Mohajerin, Abu Becr propoſed two perſons, Omar and Abu Obeidah, offering to ſwear allegiance to him on whom the ſuffrages of both parties ſhould fall. But this producing no decilion, Omar ſwore fealty to Abu Becr, and his example was followed by all the Moſlems on the ſpot; upon which he was acknowledged both by the Mohajerin and Anſars as the rightful ſucceſſor of Mahomet.

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62 Abu Becr ſucceeds him.

63 Ali diſſatisfied.

Theſe tranſactions, however, were not at all agreeable to Ali, who, as ſon-in-law to the prophet, had undoubtedly the beſt title to the ſucceſſion. He expoſtulated with Abu Becr about the manner of his election, which had been effected without his knowledge; and received for anſwer, that the exigence of affairs would not admit of deliberation; and that, had not the election been ſo ſudden, the oppoſite party would have wreſted the power entirely out of their hands. Ali was in Fatima's apartment when Abu Becr had the good luck to be elected caliph; and, upon the arrival of the news, expreſſed great diſſatisfaction. He found himſelf, however, ſoon obliged to change his note, when the new caliph ſent Omar with orders to burn the houſe where he and his friends were aſſembled, in caſe he did not concur in ſupporting the election. But notwithſtanding his forced compliance on this occaſion, it is not to be doubted that he reckoned himſelf injured; and his pretenſions were thought to be juſt by a great number of Moſlems: which notion is entertained by a very conſiderable party of Mahometans even at this day; and theſe are called *Shiites* or *ſectaries*.

Soon after Abu Becr's acceſſion, many of the Arabs refuſed to pay the tribute impoſed upon them by Mahomet, and even attempted to ſhake off his yoke altogether. This ſo alarmed the caliph and his ſubjects at Medina, that, fearing a general revolt, they ſent all not able to bear arms into the cavities of the rocks and mountains, and put themſelves in as good a poſture of defence as the ſhort time would permit. In the mean time Khaled was deſpatched with an army of 4500 men to reduce the rebels: and he ſoon coming up with them, gave them a total defeat, brought off a vaſt quantity of plunder, and made many of their children ſlaves. Nor was he content with this; for being ſent by Abu Becr to Malek Ebn Noweirah, an eminent perſon among the Arabs, and famous for his ſkill in poetry as well as his horſemanſhip and bravery, to bring him over by fair means, he immediately ordered his head to be cut off. By this means, indeed, he extinguiſhed all the remains of rebellion; but rendered himſelf exceedingly obnoxious to Abu Becr, who would have put him to death, had not Omar ſtrongly interceded for him: for Khaled had greatly exceeded his commiſſion, as Malek had returned to Mahometaniſm, and had offered to pay the money. This was not, however, the only piece of ſervice Khaled performed at this time; he alſo defeated and killed Moſeilama, who had ſet up for a prophet in the time of Mahomet, and even wanted to take the grand impoſtor himſelf into company with him. The

64 Rebellions extinguiſhed by Khaled.

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Arabia. fame general likewiſe defeated and diſperſed the troops of another prophet, called *Toleiah Ebn Khowailed*, obliging himſelf to remain concealed till after the death of Abu Becr. About the ſame time another body of rebels committed great diſorders in the province of Bahrein. Againſt theſe Abu Becr deſpatched Al Ola at the head of a conſiderable army, who ſoon obliged them to return to Mahometaniſm; having put great numbers of them to the ſword, and plundered their country in a dreadful manner.

65 War with the Greeks. Abu Becr having now no enemy to contend with in Arabia, and being free from all apprehenſions of a competitor, reſolved next to turn his arms againſt the Greek emperor. Some ſkirmiſhes had happened, in the time of Mahomet, between the Moſlems and Greeks; in one of which Zeid, a Moſlem commander, had been killed. To revenge his death, his ſon Oſama was on the point of making an irruption into Syria at the time of Mahomet's deceaſe. This enterpriſe the caliph ordered him to go on with; and it was executed by Oſama with great ſucceſs. He entered Syria, and laid waſte the country, doing the Greeks a good deal of damage: after which he returned to Arabia without any conſiderable loſs.

66 Kingdom of Hira deſtroyed. Soon after the caliph ſent Khaled at the head of a powerful army to invade Irak, and put an end to the kingdom of Hira. In this undertaking he was attended with his uſual ſucceſs. The king Al Mondar Al Maghrur loſt his life in defence of his dominions; and the kingdom was totally deſtroyed, after it had continued 622 years and eight months, as we have already hinted. The inhabitants became tributaries; and, according to Eutychius, the tribute collected on this occaſion amounted to 70,000 pieces of money. This, according to Al Makin, was the firſt tribute money ever brought to Medina.

The exigence of the caliph's affairs in Syria, however, did not ſuffer Khaled long to remain in Irak. Before the departure of the army under his command, Abu Becr had come to a reſolution to invade Syria; and finding his deſign approved by the principal officers of his court, he ſent circular letters to the petty princes of Yaman, the chief men of Mecca, &c. informing them of his intention to take Syria out of the hands of the infidels; acquainting them, at the ſame time, that a war for the propagation of the true religion was an act of obedience to God. To theſe letters they paid a proper regard; and in a very ſhort time appeared at Medina at the head of their reſpective troops, and pitched their tents round the city. Here they ſtaid till the Moſlem army deſtined to act againſt the emperor was completely formed, and in a capacity to begin its march. The caliph having viewed the troops from the top of a hill, and prayed to God for ſucceſs, attended the generals a little way on foot. As the generals were on horſeback, they could not forbear expreſſing their uneaſineſs at the caliph's thus demeaning himſelf; but he told them, that it ſignified little whether they walked on foot or rode, as they had all

67 Abu Becr's inſtructions to his generals. the ſame views, viz. the ſervice of God, and the propagation of religion. At parting, he addreſſed Yazid Ebn Abu Sofian, whom he had inveſted with the ſupreme command, in the following manner: "Take care, Yezid Ebn Abu Sofian, to treat your men with tenderneſs and lenity. Conſult with your officers on all preſſing occaſions, and encourage them to face the enemy with bravery and reſolution. If you ſhall happen to be victorious, deſtroy neither old people, women, nor children. Cut down no palm trees, nor burn any fields of corn. Spare all fruit trees, and ſlay no cattle but ſuch as you ſhall take for your own uſe. Adhere always inviolably to your engagements, and put none of the religious perſons you ſhall meet with in monaſteries to the ſword. Offer no violence to the places they ſerve God in. As for thoſe members of the ſynagogues of Satan *who ſhave their crowns*, cleave their ſkulls, and give them no quarter, except they embrace Iſlamiſm (Mahometaniſm), or pay tribute."

The Greek emperor was greatly alarmed at the approach of the Moſlem army; however, he made all neceſſary preparations for his defence, and ſent out a detachment to reconnoitre the enemy. Theſe having fallen in with the Arabs, a battle enſued, in which the Greeks were defeated with the loſs of 1200, while the Arabs loſt only 120 men. This was ſucceeded by a great many ſkirmiſhes, in which the Moſlems were generally victorious. The rich ſpoil taken on theſe occaſions was ſent as a preſent to the caliph; who having acquainted the inhabitants of Mecca with his good ſucceſs, they were thereby ſo elated, that they furniſhed him with a ſtrong reinforcement, which was immediately ordered into Syria. The Greek emperor, in the mean time, having ordered another body of his troops to advance towards the frontiers, they found an opportunity of engaging the Moſlem army under Abu Obeidah, a perſon of great piety, but little experience in war. Him they totally defeated; and Abu Becr was ſo much provoked at his defeat, that he deprived him of the command, which was given to Khaled, who was for this purpoſe recalled from Irak. That general's firſt exploit was the reduction of Boſtra, a very rich and populous city of Syria Damaſcena; which, however, he accompliſhed by treachery rather than by force of arms. Having left a garriſon of 400 men in Boſtra, and being joined by Abu Obeidah's forces, he laid ſiege to Damaſcus with an army of 45,000 men. This ſo alarmed the emperor, that he deſpatched an army of 100,000 men, commanded by one Werdan, to the relief of that city. Khaled, on hearing of the approach of this formidable army, was for marching immediately with all his forces, and giving them battle; but this was oppoſed by Abu Obeidah, as it would enable the inhabitants of Damaſcus to procure freſh ſupplies both of arms and proviſions, and conſequently render the reduction of the place more difficult. It was, therefore, at laſt agreed, that a body of troops ſhould be detached under Derar Ebn Al Wazar, an excellent officer, and an implacable enemy to the Chriſtians (as indeed were all the Moſlem generals except Abu Obeidah), to fight the enemy, whilſt the ſiege was carried on by the two generals.

68 The Moſlems defeated.

69 Damaſcus beſieged.

70 The Greeks defeated with great ſlaughter. Khaled, fearing leſt Derar's furious zeal and hatred to the Chriſtians ſhould prove fatal to his troops, told him before his departure, that though they were commanded to fight for the propagation of their religion, yet they were not allowed to throw away the lives of their men; and therefore ordered him to retire to the main body of the army, in caſe he found himſelf preſſed by a ſuperior force. But Derar, deaf to this ſalutary admonition, with his ſmall body of troops ruſhed upon

Arabia. upon the whole Chriſtian army, notwithſtanding the vaſt diſproportion of numbers. He charged them, however, with ſuch bravery, that he penetrated to the ſpot where the general gave his orders, killed the ſtandard-bearer, and carried off the ſtandard itſelf, in which was a croſs richly adorned with precious ſtones. Nay, he would in all probability have put Werdan's army to flight, had not that general's ſon, the commandant of Hems, arrived in the heat of the engagement with a body of 10,000 men; with which he attacked the Moſlems ſo briſkly in the rear, that he forced them to retire, and took Derar himſelf priſoner. This ſo diſcouraged them, that they would have taken to their heels, had not Rafi Ebn Omeirah animated them with the following words: "What! do not you know, that whoever turns his back upon his enemies offends God and his prophet? and that the prophet declared the gates of paradiſe ſhould be open to none but ſuch as fought for religion? Come on! I will go before you. If your captain be dead, or taken priſoner, yet your God is alive, and ſees what you do." This exhortation had ſuch an effect upon his troops, that returning to the charge, they maintained their ground with unparalleled bravery, till Khaled arrived with a conſiderable body of infantry and 1000 horſe. The arrival of this general ſoon turned the fortune of the day. A party of the imperial army went over to the Moſlems, and the reſt took to their heels. Derar alſo was retaken, and carried off in triumph. However, Werdan, having collected the ſhattered remains of his forces, and received a reinforcement from the emperor, found his army ſtill to amount to 70,000 men, with which he reſolved to make another attempt for the relief of Damaſcus. They were attended with ſtill worſe ſucceſs in this ſecond attempt than they had been before; being utterly defeated, with the loſs of 50,000 men, ſo that they were no more in a condition to attempt any thing; and, in conſequence of this, the city was ſoon taken, notwithſtanding the utmoſt efforts of the beſieged.

71 The city taken.

72 Abu Becr dies, and is ſucceeded by Omar.

This diſaſtrous event happened in the year 634; and the very day that Damaſcus was taken, Abu Becr died of a conſumption in the 63d year of his age. He was ſucceeded by Omar, who was proclaimed caliph that very day; and the firſt title aſſigned him was, *The caliph of the caliph of the apoſtle of God.* But the Arabs conſidering, that by the additions to be continually made at the acceſſion of every new caliph, the title would become too long, they with one voice ſaluted him, *Emperor of the believers;* which illuſtrious title deſcended afterwards to his ſucceſſors by a kind of inconteſtable right.

The new caliph was no ſooner ſettled than he replaced Abu Obeidah in the command of the army in Syria, being greatly diſpleaſed with the cruel and bloodthirſty diſpoſition of Khaled. He alſo commanded Abu Obeidah to have an eye upon Paleſtine, and to invade it as ſoon as an opportunity offered. Khaled bore his diſgrace with great magnanimity; and ſwore, that though he had always had the greateſt regard for Abu Becr, and the utmoſt averſion to Omar, he would ſubmit to God's will, and obey the new caliph as the lawful ſucceſſor of Mahomet. The Moſlem forces in the mean time having made all proper diſpoſitions for improving the advantages they had gained, Abu Obeidah ſent a detachment of 500 horſe to a place called *Dair Abel Kodos*, about 30 miles from Damaſcus, to plunder the Chriſtians there. In this place there lived a prieſt ſo eminent for his ſanctity, that the neighbouring people of all ranks reſorted to him for his bleſſing and inſtruction. When any perſon of diſtinction married, he took with him his new ſpouſe, in order to receive this holy man's benediction. The fame of this prieſt's ſanctity drew ſuch numbers of people to that place every Eaſter, that a great fair was kept annually at his houſe to which were brought vaſt quantities of the richeſt ſilk, plate, jewels, &c. When the Arab drew near to this place, to which they were conducted by a Chriſtian, they were informed that the governor of Tripoli had married his daughter to a perſon of diſtinction, who had carried his lady to the above-mentioned prieſt. She was attended by a guard of 5000 men; beſides which, the Jews, Greeks, Copts, and Armenians, at that time aſſembled about the monaſtery, amounted to 10,000. Notwithſtanding this, the Moſlem commander determined to carry off the lady; and having told his men, that they ſhould either enjoy the riches of the Chriſtians, or the pleaſures of paradiſe, he commanded them to fall on the enemy. The impetuoſity of theſe enthuſiaſts at firſt bore all down before them; but the Chriſtians, perceiving they were but a handful of men, ſurrounded them on all ſides, and reſolved to make them pay dear for their temerity. But Abu Obeidah, being informed of their dangerous ſituation, immediately diſpatched Khaled with a ſtrong detachment to the relief of his diſtreſſed countrymen. The conſequence of this was, that the Chriſtians were entirely defeated, and the unhappy lady carried off, with 40 maids that waited upon her, as well as all the wealth brought to the above-mentioned fair; among which were many rich garments curiouſly wrought, and in particular one adorned with the effigies of our Saviour. All theſe were ſold for ten times their weight of gold to ſome of the opulent Arabs of Yaman. The young lady was given to Abdallah, who kept her to the reign of Yezid. Of this advantage Abu Obeidah ſent notice to the caliph by a letter, in which he alſo acquainted him that ſome of his men had drunk wine. Theſe delinquents, by the advice of Ali, had each of them 80 ſtripes beſtowed upon the ſoles of their feet: after which, many others, who had never been ſuſpected of drinking this prohibited liquor, made a voluntary confeſſion, and received the ſame chaſtiſement.

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73 Governor of Tripoli's daughter carried off.

74 Punishment of ſome ſoldiers who had drunk wine.

The Moſlem general next ſet about reducing the principal fortreſſes in Syria, and ſoon became maſter of Kinniſrin, Baalbec, Adeſſan, Shaizar, and Hems; on the news of which, the Greek emperor Heraclius, reſolving if poſſible to put a ſtop to the cruel and unprovoked ravages of theſe barbarians, ſent againſt them an army of 240,000 men, commanded by one Manuel, whom the Arabs called *Mahan*. But this vaſt multitude was utterly defeated by Khaled; upon whom Abu Obeidah conferred the ſupreme command, on account of his ſuperior ſkill in military affairs. This battle was fought near a village called *Yermouk;* and, according to the Arabian hiſtorians, the Chriſtians had 150,000 men killed and 40,000 taken priſoners, while the Moſlems loſt no more than 4030 men.

75 The Greeks utterly defeated at Yermouk.

The defeat at Yermouk was immediately followed by

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by the loſs of the whole province of Paleſtine. The reduction of Jeruſalem was one of its firſt conſequences; and Omar, being appriſed of the ſucceſs of his arms, immediately ſet out to viſit that holy place, at the requeſt, it is ſaid, of the inhabitants. The caliph was attended in his journey by a numerous retinue, moſt of whom afterwards returned home. He rode upon a red camel, and carried with him two ſacks, one of which contained a ſort of proviſion conſiſting of barley, rice, or wheat, ſodden and unhuſked, and the other fruits. Before him he had a leather bottle, very neceſſary in theſe deſert countries to put water in; and behind him a wooden platter. Before he left the place where he had reſted the preceding night, he conſtantly ſaid the morning prayer; after which he addreſſed himſelf to his attendants in a devout ſtrain, always uttering before them ſome pious ejaculations. Then he communicated his proviſion to them; every one of his fellow travellers eating with him out of the ſame platter, without the leaſt diſtinction. His clothes were made of camels hair, and were in a very tattered condition; nor could any thing be more mean or ſordid than the figure he made. On the road he diſtributed juſtice among his ſubjects; concerning which we have ſeveral anecdotes; but that moſt to his honour is the following: Having obſerved ſome poor tributaries expoſed to the heat of the ſun, a very cruel puniſhment in thoſe hot countries, for not being able to pay the ſum demanded of them, he ordered them to be releaſed; telling his attendants, that he once heard the apoſtle of God ſay, "Do not afflict men in this world; for thoſe who do ſo, God ſhall puniſh in hell fire at the day of judgment." His orders were immediately executed, to the great grief of the oppreſſors; and the caliph continued his route. On the confines of Syria he was met by Abu Obeidah attended by an eſcort, who conducted him to the Moſlem camp, where he was received with the utmoſt demonſtrations of joy; and from thence to Jeruſalem. The morning after his arrival, he ſaid prayers and preached to the troops. In his ſermon he repeated the following paſſage out of the Koran. "Whomſoever God ſhall direct, he ſhall be rightly directed; and whomſoever he ſhall cauſe to err, thou ſhalt not find any to defend or to direct." Upon this a Chriſtian roſe up, and ſaid aloud twice, "God cauſes no one to err." Omar made no anſwer to him, but commanded the Moſlems near him to ſtrike off the infidel's head if he repeated thoſe words again; but the prieſt took care to give him no further interruption. After the concluſion of his ſermon, he pitched his tent, made of hair, within ſight of the city: then he ſigned the articles of capitulation; by which the inhabitants were entitled to the free exerciſe of their religion, the poſſeſſion of their properties, and his protection.

76 Omar viſits Jeruſalem

77 Anecdote of him.

The articles of capitulation being ſigned, Omar, in purſuance of his engagements, gave the inhabitants a ſchedule, by which they were ſecured in the full poſſeſſion of all that had been agreed upon: after which the gates were opened to him, and he entered the town. He was waited upon by the patriarch Sophronius, with whom he converſed familiarly, and aſked him many queſtions concerning the antiquities of the city. One of the firſt places they viſited was the temple of the reſurrection, in the midſt of which Omar ſat down; and when the hour of prayer was come, told the patriarch he had a mind to pray, and deſired him to ſhow him a place for that purpoſe. Sophronius told him he might do ſo where he was; but this he abſolutely refuſed. Then the patriarch led him to St Conſtantine's church; but he likewiſe declined praying there. At laſt he ſaid his prayers upon one of the ſteps of the eaſt gate of the church; telling the patriarch afterwards, that had he prayed in any of the churches, the Moſlems would infallibly have taken it from them, which, he ſaid, they might attempt as it was, and therefore gave him a paper, wherein the Moſlems were commanded not to pray on the ſteps of St Conſtantine's church in any numbers, but only one by one. After this he deſired the patriarch to ſhow him a place where he might erect a moſque; and was conducted to the place where Jacob's ſtone lay, on which he ſlept when he ſaw the viſion of the ladder. This ſtone had been hitherto ſlighted, and no building ſuffered to be erected upon it, in order to fulfil our Saviour's prophecy, that the habitation of the Jews ſhould be left unto them deſolate, and that not one ſtone ſhould be left upon another. In conſequence of this neglect it was entirely covered with dirt, which the caliph immediately began to carry away in his veſt; and the Moſlems ſoon haſtening to aſſiſt him, the ſtone was cleared in a very ſhort time. We are told by Theophanes, that when Omar entered the temple of the reſurrection, he was clad in ſuch mean and dirty apparel, that the patriarch took great offence at his appearance, and with much difficulty at laſt prevailed upon him to put on ſome clean linen and clothes till his own could be waſhed. The ſame author relates, that when the patriarch firſt ſaw Omar in that place, he could not forbear crying out, "This is of a truth the abomination of deſolation, ſpoken of by Daniel the prophet, ſtanding in the holy place!" Theſe words, as Mr Ockley imagines, being overheard by the Moſlems, they trumped up a ſtory of the patriarch's having owned that the conqueſt of Jeruſalem by Omar was foretold by the prophet Daniel; and that an ancient prophecy was kept in Jeruſalem concerning Omar, wherein his perſon was deſcribed, his name and religion ſpecified, and he declared to be the only man that could reduce that city.

Before the caliph left Syria, he divided that country into two parts; one of which, that lay between Haûran or Aûran and Aleppo, which was not perfectly conquered, he committed to the care of Abu Obeidah, giving him the ſtricteſt orders to reduce it as ſoon as poſſible. Yezid Ebn Abu Sofian was commanded to take upon him the care of the other, which comprehended Paleſtine, and the ſea coaſt, and to make himſelf abſolute maſter of it, having a body of troops aſſigned him for that purpoſe. He alſo directed Amru Ebn Al As to invade Egypt, then in a very languiſhing condition, with a body of Moſlem forces. After having made theſe diſpoſitions for extending his conqueſts, Omar ſet out for Medina, where he arrived in perfect health, to the great joy of the inhabitants, who apprehended, from his long ſtay at Jeruſalem, that he had intended to fix his reſidence there.

78 He returns to Medina.

Soon after Omar's departure, Yezid advanced to Cæſarea; but found the place ſo ſtrong that he was obliged to continue ſome time in a ſtate of inaction.

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Abu Obeidah, in the mean time, advanced towards Aleppo, the citadel of which was at that time the ſtrongeſt in Syria. The citizens were ſtruck with the utmoſt conſternation at his approach. They had at that time two governors, who were brothers, and reſided in the caſtle, which was ſituated at a little diſtance from the city. The names of theſe two governors, who were of very different diſpoſitions, were Youkinna and John. Their father, by the emperor Heraclius's appointment, preſided over all that tract which lay betwixt Aleppo and the Euphrates; and, after his death, the chief management of affairs devolved upon Youkinna, his brother John ſpending his time moſtly in devotion and acts of charity. He would therefore gladly have prevailed on Youkinna to purchaſe a peace from the Arabs with money, rather than make his country a ſcene of blood and ravages; but this not ſuiting the martial genius of Youkinna, he armed a conſiderable number of the citizens, among whom were ſeveral Chriſtian Arabs, and diſtributed money among them. He then told his men that he intended to act offenſively againſt the Arabs, and even to engage them if poſſible before they drew too near. To inſpire them with the greater reſolution, he obſerved, that the Moſlem army was divided into ſeveral bodies; one of which had orders to beſiege Cæſarea, another to march to Damaſcus, and the third to envade Egypt. Having thus animated his troops, he put himſelf at the head of 12,000 of them, and marched forwards to get intelligence of the enemy's motions.

79 A Moſlem detachment defeated by Youkinna.

Abu Obeidah, in the mean time, had ſent before him Caab Ebn Damarah, with 1000 men; giving him expreſs orders not to fight till he had received information of the enemy. Youkinna's ſpies diſcovered Caab and his men reſting themſelves and watering their horſes without the leaſt apprehenſion of danger; of which the general being appriſed, he poſted one part of his troops in ambuſcade, and with the other attacked the Moſlems. The Arabs behaved with their uſual valour; and at firſt repulſed the Chriſtians, notwithſtanding their ſuperiority in numbers; but being attacked by the troops that lay in ambuſh, they were at laſt forced to retire; having 170 killed, and almoſt all the reſt wounded.

80 Aleppo ſubmits to Abu Obeidah.

After Youkinna's departure, the inhabitants of Aleppo, conſidering the calamities that awaited them if their city ſhould be taken by ſtorm, ſubmitted without delay to Abu Obeidah, and were taken under the protection of the caliph. This diſagreeable news being communicated to Youkinna, he poſted home with all poſſible expedition, leſt an attempt ſhould be made on the caſtle in his abſence. On his arrival at Aleppo, he was ſo highly incenſed againſt the inhabitants, that he threatened them with death if they did not diſannul the treaty with the Arabs, and deliver up the

81 Cruelty of Youkinna.

authors of it into his hands. This demand not being immediately complied with, he fell upon the citizens with great fury, and killed 300 of them; among whom was his brother John, whoſe head he cauſed to be ſtruck off, charging him with being the author and abettor of the late pernicious ſcheme. He would have made a much greater ſlaughter, had not the Moſlem army at that inſtant arrived before the town; upon which Youkinna retired into the caſtle with a conſiderable body of troops: but before this could be effected, he was obliged to ſuſtain an attack from the Arabs, in which he loſt 300 men. The action was no ſooner ended than the inhabitants of Aleppo brought out forty of Youkinna's men, and as a proof of their fidelity delivered them into Abu Obeidah's hands. Of theſe ſeven embraced Mahometaniſm, and the reſt were beheaded.

Immediately after Youkinna had ſhut himſelf up in the caſtle, a council of war was held in the Moſlem camp, wherein it was deliberated what meaſures were to be purſued on the preſent occaſion. Khaled gave it as his opinion, that the caſtle ought immediately to be attacked with all the Arab forces, before the emperor had time to ſend them any aſſiſtance. This advice was followed by Abu Obeidah, who cauſed the citadel to be immediately inveſted; and ſoon after he had ſurrounded it with all his forces, made a moſt vigorous aſſault. The beſieged defended themſelves with great bravery, and after a very warm diſpute drove the enemy into their camp; and as they threw a great many ſtones out of their military engines, many of the Moſlems were killed, and a much greater number wounded. This encouraged Youkinna to make a ſally with a ſtrong party of the garriſon the following night. The fires being then out in the Moſlem camp, and the beſiegers not expecting ſuch an unſeaſonable viſit, 60 of them were killed on the ſpot, and 50 taken priſoners. Youkinna, however, being briſkly attacked by Khaled, who ſoon drew together a body of troops to oppoſe him, loſt about 100 men in his retreat. The next day, he cauſed the priſoners to be beheaded in ſight of the Moſlem camp; and receiving advice that a ſtrong party of Arabian cavalry was ſent out to forage, he ordered a body of his horſe to drive them to their camp; which they accordingly did, killed 130 of them, ſeized all their camels, horſes, &c. and then retired to the mountains. Here they propoſed to remain concealed till the following night, and then return to the caſtle; but Abu Obeidah, being informed of what had happened, detached Khaled and Derar with a body of troops to purſue the Greeks, and revenge the late affront. Khaled, being informed of the route the Chriſtians had taken, poſſeſſed himſelf of the only paſs by which they could return to the caſtle; and having poſted there a body of his men whoſe courage he could depend upon, took 300 of the Greeks priſoners as they attempted to return, and put all the reſt to the ſword. The next morning, to retaliate Youkinna's cruelty, the priſoners were all brought out and beheaded in ſight of the garriſon.

83 His vigorous defence

Notwithſtanding this diſaſter, Youkinna made ſeveral ſallies with good ſucceſs, wherein he killed a great number of the enemy, and haraſſed them to ſuch a degree, that Abu Obeidah found himſelf obliged, for his greater ſecurity, to remove his camp to about a mile's diſtance from the caſtle; by which manœuvre he likewiſe hoped that Youkinna would be leſs upon his guard. Herein, however, he found himſelf miſtaken: for the Greek commander, by the prudent meaſures he took, eluded all ſurpriſe; and though Abu Obeidah continued the ſiege for four months after the laſt mentioned blow given to the garriſon by Khaled, yet he had ſcarce any hopes of making himſelf maſter of it at laſt. Having nothing material to write to the caliph, he remained a long time ſilent; at which

Arabia. Omar being very much concerned, wrote to him, deſiring an account of the affairs in Syria. Abu Obeidah acquainted him that the city of Aleppo had ſubmitted to him; and that the citadel was the only place which held out in all that country, before which he had loſt a great number of men, which, he ſaid, had induced him to think of raiſing the ſiege, and moving with his army in that track which lay between Antioch and Aleppo. This news was by no means agreeable to the caliph, who commanded his general to continue the ſiege at all events, and ſent him a reinforcement of Arab troops, together with 70 camels, to aſſiſt the infantry in their march.

84 The citadel taken by ſtratagem. Among the troops ſent by Omar on this occaſion, there was an Arab of a gigantic ſize, called *Dames*, who was a man of great courage and reſolution. He obſerving the little progreſs made by the Moſlems, bethought himſelf of a ſtratagem by which that fortreſs might be reduced, which ſeemed ſo difficult to be accompliſhed by force. He therefore deſired that Abu Obeidah would aſſign him the command of a party conſiſting only of thirty men; which at Khaled's requeſt was readily granted. Then he begged the general to raiſe the ſiege, and retire to about three miles diſtance from the caſtle, which was likewiſe immediately complied with. The following night Dames, who had poſted himſelf with his party very near the citadel, found means to ſeize a Greek, from whom he learned that Youkinna, after the ſiege was raiſed, had exacted large ſums of money from the citizens, on account of the treaty they had concluded with the Arabs; and that he was one of thoſe who had endeavoured to make their eſcape from the oppreſſion of ſuch a tyrant, by leaping down from the wall. This man Dames took under his protection; but beheaded five or ſix others who fell into his hands, and could give no good account of themſelves. He then covered his head and ſhoulders with a goat's ſkin, and took a dry cruſt in his hand, creeping on the ground till he got cloſe to the foot of the wall. If he heard any noiſe, or ſuſpected any perſon to be near, he made ſuch a noiſe with his cruſt as a dog does when he is gnawing a bone; his companions ſometimes walking, and ſometimes creeping after him in the ſame manner. He had before deſpatched two of his men to Abu Obeidah, to deſire that a detachment of horſe ſhould be ſent him by break of day to ſupport his ſmall party, and facilitate the execution of the plan he had formed. At laſt Dames found an opportunity of raiſing ſeven men upon his ſhoulders, who ſtood upon one another's ſhoulders in ſuch a manner that the higheſt reached the top of the wall. Here he ſoon placed himſelf, ſeized a watchman whom he found aſleep, and threw him over the wall. Two others, whom he found in the ſame condition, he ſtabbed with his dagger, and threw them over likewiſe. Then he let down his turban, and drew up the ſecond of his brethren, as they two did the third, and by their help Dames himſelf and all the reſt were enabled to mount the wall. He then privately ſtabbed the ſentry at each of the gates, and put his men in poſſeſſion of every one of them. The ſoldiers of the garriſon, however, were at laſt alarmed, and ſurrounded the Arabs, who were on the point of periſhing, when Khaled appeared at the head of a detachment of cavalry. On the ſight of that general, who was now grown terrible to the Chriſtians, the beſieged threw down their arms, and ſurrendered at diſcretion. Youkinna and ſome of the principal officers turned Mahometans, in order to ſave their poſſeſſions; and the caſtle, being taken by ſtorm, was pillaged by the Moſlems. Dames acquired great glory by this exploit; and, out of complaiſance to him, the army did not decamp from Aleppo till he and his men were perfectly cured of their wounds.

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85 Youkinna's apoſtacy.

After the reduction of the citadel of Aleppo, Abu Obeidah intended to march to Antioch; but was diverted by Youkinna, who was now become a violent enemy to the Chriſtians. He told the Moſlem general, that his conqueſt of that part of the country would not be complete without the reduction of Azaz, a place of great importance, where Theodorus, Youkinna's couſin-german, was commandant. This fortreſs he propoſed to become maſter of, by putting himſelf at the head of 100 Arab horſe, dreſſed in the Greek habit, who were to attend him to Azaz. Upon his arrival there, he was to aſſure Theodorus that he was ſtill in reality a Chriſtian, and had taken that opportunity to eſcape from the Moſlem camp. But to make his ſtory more probable, Abu Obeidah was to ſend after him a detachment of 1000 horſe, who were to purſue him as far as Morah, a village in the neighbourhood of Azaz, with orders to poſt themſelves there; from whence, if ſuch a meaſure ſhould be found neceſſary, they might eaſily advance to Azaz, to facilitate the conqueſt of that place. To this ſcheme Abu Obeidah agreed; but Youkinna with all his men were immediately taken priſoners by Theodorus, who had been informed of the whole affair by a ſpy in the Moſlem camp, who had ſent him a letter by a pigeon. The fortreſs, however, was ſoon reduced, and Youkinna regained his liberty; but was ſoon after taken priſoner a ſecond time, and brought before his old maſter Heraclius, who then reſided at Antioch. He told the emperor, that he had only pretended to embrace Mahometaniſm, in order to be able to do his imperial majeſty the more eſſential ſervice; and ſo far gained upon him, that he was ſoon after appointed governor of that city; the conſequence of which was, that the Arabs were put in poſſeſſion of it by his treachery.

86 He is taken priſoner and brought before Heraclius.

87 Attempt to aſſaſſinate Omar miſcarries.

The emperor being quite diſheartened at his continual bad ſucceſs, it was ſuggeſted to him by the king of Ghaſſan, who had fled to him for refuge, as we have already obſerved, that, however deſperate his affairs might be, they would be perfectly reſtored by the aſſaſſination of the caliph. This piece of ſervice he undertook to perform for the emperor; and deſpatched one Wathek Ebn Moſafer, an Arab of his tribe, and a reſolute young man, to Medina for that purpoſe. Wathek, ſome time after his arrival there, having obſerved the caliph to fall aſleep under a tree, on which he had placed himſelf ſo as not to be obſerved by any one, drew his dagger, and was upon the point of ſtabbing him; but, as the Arab writers tells us, he was deterred by a lion, who walked round the caliph, and licked his feet till he awoke, after which he inſtantly went away. This ſtruck Wathek with a profound reverence for Omar; he came down from his tree where he had been confined by the lion, confeſſed his deſign, and embraced the Mahometan religion.

88 The Greek defeated.

Soon after the reduction of Antioch, Abu Obeidah ſent

Arabia. sent an account of his ſucceſs to Omar; and receiving an order to invade the mountainous parts of Syria, he aſked his general officers which of them would command the body of troops deſtined for this purpoſe. One Meiſarah Ebn Melrouk having offered his ſervice, the general gave him a black ſtandard, with the following inſcription upon it in white letters: "There is but one God; Mahomet is the Apoſtle of God." The body aſſigned him for this purpoſe conſiſted of 300 Arabs, and 1000 black ſlaves commanded by Dames. Meiſarah, at the head of his troops, with ſome difficulty aſcended the mountains, and, with much more, advanced to that part where the emperor's forces were poſted. The cold was ſo intenſe on the ſummits of thoſe mountains, that the Arabs, who had been accuſtomed to a warm climate, could hardly bear it. For ſome time they could not meet with a ſingle perſon to give them intelligence of the enemy's motions; but at laſt they took a Greek priſoner, who informed them, that the imperial army, which conſiſted of 30,000 men, lay encamped on a ſpot not three leagues diſtant. The priſoner refuſing to profeſs Mahometaniſm, they cut off his head, and then marched towards the imperial camp. The Greeks, hearing of their approach, advanced to meet them; and the Moſlems being ſurrounded on all ſides, were on the point of being all cut off, when Khaled appeared at the head of 3000 horſe, and after him Ayab Ebn Ganem with 2000 more. At the approach of the horſe under the command of the terrible Khaled, the Greeks retired, leaving all their tents, together with their rich furniture and effects to the Arabs. In this engagement, one of Omar's chief favourites, named *Abdalla Ebn Hodaſa*, was taken priſoner, and ſent directly to Conſtantinople. The caliph was ſo much concerned at this, that he ſent a letter to Heraclius, deſiring his releaſe; which the emperor not only complied with, but made him many valuable preſents, ſending at the ſame time a jewel of immenſe value as a preſent to the caliph. This Omar offered to the jewellers of Medina, but they were ignorant of its value: the Moſlems therefore begged him to keep it for his own uſe; but this he ſaid he could not be anſwerable for to the public. It was therefore ſold, and the money depoſited in the public treaſury.

89 Omar's diſintereſtedneſs.

About this time alſo Khaled advanced with a body of troops as far as the Euphrates, and took Manbij, Beraa, Bales or Balis, exacting of the inhabitants 100,000 dinars for their preſent ſecurity, and impoſing on them an annual tribute for the future. He alſo made himſelf maſter of Raaban, Dulouc, Korus, the Cyrus or Cyrrhus of the ancients, and ſeveral other fortified towns, nothing being now able to ſtand before him. Amru Ebn Al As now likewiſe prepared for the reducing ſome places in Paleſtine that ſtill held out. While he remained in this province, he had a conference with Conſtantine the emperor's ſon, who endeavoured to perſuade him to make peace with the Chriſtians; but this he not agreeing to, unleſs they would conſent to pay tribute, all hopes of an accommodation vaniſhed, and the generals on both ſides prepared to enter upon action. In the mean time an officer came from the Chriſtian camp, dreſſed in very rich apparel, who challenged the ſtouteſt man among the Moſlems to fight him in ſingle combat. The challenge was accepted by a young Arab officer of Yeman; who being animated by a notion, derived from the prophet himſelf, that "the ſpirits of the martyrs reſt in the crops of green birds, that eat of the fruits and drink of the rivers of paradiſe," diſcovered an uncommon eagerneſs to encounter his enemy. But the Chriſtian cheated not only killed this youth, but two or three more of the Moſlems who came to his aſſiſtance. He was then attacked by Serjabil Ebn Hoſanah, one of the generals, but a man ſo weakened by faſting, that he could ſcarce ſtand before him, and would therefore have been undoubtedly killed, had not a Greek horſeman very opportunely interpoſed, and with one blow of his cimitar cut off the Chriſtian's head. Serjabil, greatly ſurpriſed at this deliverance, aſked the horſeman who he was, and from whence he came; to which he replied in the following terms: "I am the unfortunate Toleiha Ebn Khowaid, who ſet up for a prophet, and, lying againſt God, pretended to inſpiration." In conſequence of having ſaved his life, Serjabil introduced him to Amru; and writing a letter to Omar, wherein he acquainted him with the ſignal proof Toleiha had given of his repentance, he obtained his pardon from the caliph.

90 Account of Toleiha the falſe prophet.

Though the two armies did not come to a general engagement, yet they had frequent ſkirmiſhes, in which the Arabs always got the better, and in ſome the Greeks ſuffered very conſiderably. This, together with the ſeverity of the ſeaſon, which was then uncommonly cold, ſo dejected the ſoldiery, that they began to deſert in great numbers. Conſtantine, therefore, finding his troops to diminiſh daily, and the Arabs to grow ſtronger and ſtronger, took the advantage of a tempeſtuous night to eſcape to Cæſarea, which Yezid had not been able to take, leaving his camp to be plundered by the enemy. This city was ſoon after inveſted by Amru; and at the ſame time, Youkinna having made himſelf maſter of Tripoli by treachery, ſeized 50 ſhips from Cyprus and Crete, which carried a ſupply of arms and proviſions for the emperor's troops, and had entered the port without knowing that the Arabs were maſters of the town. With theſe ſhips he undertook an expedition againſt Tyre; and telling the inhabitants that he brought a ſupply of arms and proviſions for Conſtantine's army, he was admitted into the town, and received with great kindneſs. Here, however, he had not been long before he was diſcovered by one of his own ſoldiers, and put under arreſt, with 900 of his men. He was, however, ſet at liberty by thoſe to whoſe care he was committed; and then opened the gates of the town to Yezid, by whom it had been inveſted. Conſtantine having got intelligence at Cæſarea of the loſs of Tripoli and Tyre, was ſo diſheartened, that he ſet ſail from that city with all his family and the greateſt part of his wealth; and the citizens then thought proper to make the beſt terms they could with Amru. The ſurrender of this city was followed by that of all the other cities and fortreſſes in the province; and thus the Arabs drove the Greeks out of the whole country of Syria extending from the Mediterranean to the Euphrates. This conqueſt was completed in the 18th year of the Hegira, ſix years after it had been undertaken.

91 Youkinna taken priſoner.

92 Tyre and Cæſarea reduced.

This year there happened ſuch violent ſtorms of hail in the peninſula of the Arabs, that a conſiderable extent of territory was laid waſte by them, and a great num-

93 Violent ſtorms, plagues, &c.

Arabia. ber of animals of various kinds deſtroyed. An epidemical diſtemper likewiſe raged at Medina, which ſpread itſelf all over the neighbouring territory, and ſwept away great numbers of people. Syria alſo was viſited by a dreadful plague; ſo that the Moſlems loſt there 25,000 men, among whom were Abu Obeidah himſelf, Yezid Ebn Abu Sofian, Serjabil, and many other perſons of diſtinction. In ſhort, ſo great was the mortality occaſioned by the plague, both in Arabia and Syria, that the Arabs ſtyle the 18th year of the Hegira the *year of deſtruction*.

94 Egypt reduced; Amru Ebn Al As, having now executed the caliph's orders in Syria, ſet out on his expedition againſt Egypt. His firſt attempt was on Tarma, a town ſituated on the iſthmus of Suex. This he reduced after a month's ſiege; and having narrowly viewed its ſituation, he formed a deſign of cutting through the iſthmus, and thus joining the Mediterranean and Rea ſea: but this project was not well reliſhed by the caliph, who apprehended that it would facilitate the entrance of the Chriſtians into the peninſula of Arabia. From Tarma he marched to Meſr, the Memphis of the ancient geographers; which, after a ſiege of ſeven months, was delivered up to him by the treachery of Al Mokawkas the governor. From Meſr he continued his march towards Alexandria, and having defeated the emperor's army, cloſely inveſted that city. While his army lay before this capital, Amru himſelf had the misfortune to be taken priſoner and carried into the town. Being brought before the governor, he aſked him why he committed ſuch ravages and depredations in the Chriſtian territories? To this Amru reſolutely anſwered, "We are come hither to oblige you either to profeſs Mahometaniſm, or pay an annual tribute to the caliph; to one of which conditions you muſt ſubmit, or be all of you put to the ſword." A Greek who ſtood by hearing this, told the governor that Amru was certainly the Moſlem general, and therefore deſired him to cut off his head. Upon this Werdan, one of Amru's ſlaves, perceiving the extreme danger his maſter was in, gave him a box on the ear, exclaiming againſt his impudence for talking in ſuch a manner. The governor being impoſed upon by this ſhallow artifice, not only ſaved his life, but, to ſhow his generoſity, diſmiſſed him without ranſom. This was ſoon followed by the loſs of Alexandria, and that by the conqueſt of the whole kingdom: after which, Amru deſpatched Okba Ebn Nafe with a body of troops to penetrate farther into Africa; and that general made himſelf maſter of all the country lying between Barca and Zoweilah, reducing under his dominion alſo that part of the continent which now forms the piratical kingdom of Tripoli in Barbary.

95 together with Barca and Tripoli.

Soon after the Moſlems had made themſelves maſters of Alexandria, a grievous famine raged in Arabia, particularly at Medina, then the reſidence of the caliph. This obliged Omar to write to Amru to ſend him a ſupply of corn, with which Egypt at that time abounded. In compliance with this order, Amru ſent a train of camels laden with corn, in a continued line from Egypt to Medina; the firſt of which were entering Medina when the laſt were leaving Alexandria. But this method of conveying corn proving too tedious and expenſive, he ordered him to clear the Amnis Trajanus of Ptolemy, now the Khalis, which runs from one end of Cairo to the other, of the ſand and gravel with which it was choked. This he accordingly did, and by that means rendered the communication between Egypt and Arabia much more eaſy than it had formerly been. Arabia.

96 The Perſians defeated. While the Arabs thus extended their conqueſts in the weſt, they were no leſs ſucceſsful in the eaſt. We have already taken notice of Khaled's having been ſent into Irak to reduce the kingdom of Hira, and of his being recalled to aſſiſt in the conqueſt of Syria. As the kings of Hira were under the protection of the Perſian monarchs, the deſtruction of that kingdom neceſſarily brought on a war with the Perſians. After the departure of Khaled, the command of the forces was left with Abu Obeid Ebn Maſud, together with Al Mothanna Ebn Haretha, Amru Ebn Haſem, and Salit Ebn Kis. Abu Obeid having paſſed a river contrary to the advice of the other generals, was killed, and his troops in great danger; however, Al Mothanna made an excellent retreat, and repaſſed the river without any conſiderable loſs. After this he fortified himſelf in his camp till he received a conſiderable reinforcement from the caliph; when the Moſlem army marched to Dir Hind, and thence continued to make frequent excurſions, ravaging that part of Irak that lay next to the Euphrates. A body of 12,000 choſen horſe was now deſpatched againſt thoſe invaders, under the command of one Mahran. At firſt the Perſians had the advantage, and obliged the Arabs to retire; but they were ſoon brought back by Al Mothanna, and the battle laſted from noon till ſunſet. At laſt Al Mothanna, engaging Mahran in ſingle combat, laid him dead at his feet; upon which the Perſians fled to Al Madayen, a town ſituated on the Tigris, about a day's journey from Bagdad. After this a powerful army was deſpatched by the Perſians under the command of one Ruſtam: but he alſo was killed, and his troops were entirely diſperſed. At the ſame time, Abu Muſa, another Moſlem general, defeated a formidable body of troops under the command of Al Harzaman, a noble Perſian, at Ahwaz.

Not content with thoſe victories, ſoon after the reduction of Damaſcus, the caliph deſpatched Saad Ebn Abu Wakkas, to diſlodge the Perſians from ſome diſtricts they poſſeſſed in the neighbourhood of the Euphrates. Saad having drawn together a body of 12,000 men, advanced to Kadeſia, a city bordering upon the deſerts of Irak; where, having utterly defeated an army of 120,000 Perſians, he made himſelf maſter of the opulent city of Al Madayen, and poſſeſſed himſelf of Yezdejerd's treaſury, which was ſo rich, if we may believe the Arabian writers, that Saad took out of it three thouſand millions of dinars, amounting to two thouſand and twenty-five millions of pounds ſterling; an enormous and almoſt incredible ſum. From thence Saad went to that part of the palace where the king's plate was depoſited, which he carried off, as well as an immenſe quantity of camphire with which another part of the palace was entirely filled. This laſt the Arabs ſeem to have carried off merely for the ſake of plundering, as they were ſo much unacquainted with the nature of it, that they mixed it with their bread, which gave it a bitter and diſagreeable taſte. Afterwards the Arab general carried off the crown and royal garments, adorned with gold and jewels of ineſtimable value. He alſo plundered his armoury, which was well ſtored with

97 Incredible treaſure taken from them.

Arabia. with all ſorts of weapons; after which he cauſed the roof of his porch to be opened, where he found another treaſure, equal in value to ten millions of crowns. He alſo found among the furniture of the palace a piece of ſilk tapeſtry, 60 cubits ſquare, which was adorned with a great variety of beautiful flowers, herbs, and plants, formed of gold, ſilver, and jewels, the moſt valuable that could be procured. This being brought to Omar, he cut it in pieces, and diſtributed it among the Moſlems: and that part which fell to Ali's ſhare, and which was yet none of the beſt, he ſold for 20,000 crowns.

98 Meſopotamia reduced.

In the 20th or 21ſt year of the Hegira, the Arabs, ſtill unſated with conqueſt, invaded Meſopotamia under Aiyad Ebn Ganem, where the city of Edeſſa ſubmitted on the firſt ſummons. From Edeſſa he marched to Conſtantia, or Conſtantina, ſuppoſed to be the Nicephorium of the ancients. This he took by ſtorm, as likewiſe Daras, where he maſſacred all the people he found in the place; and theſe repeated ſucceſſes ſo terrified the reſt of the fortified towns, that they all ſubmitted without reſiſtance. At the ſame time Al Mogheirah Ebn Shaabah, one of the caliph's commanders, made himſelf maſter of Shiz, a place famous for the birth of Zerduſht the Perſian philoſopher, and overran the whole province of Aderbijan. He alſo poſſeſſed himſelf of all the country of Armenia bordering on Mount Taurus; nay, he in a manner obliged the whole region to own the authority of the caliph, and penetrated into Cappadocia. The ſame year alſo Saad made himſelf maſter of Ahwas, the capital of Khuzeſtan (the ancient Suſiana); in conſequence of which he became maſter of the greateſt part, if not the whole, of that province; at the ſame time that Al Nooman

99 Omar murdered.

conquered the greateſt part of Khoraſan. But while Omar's troops were thus irreſiſtibly overrunning the fineſt countries in the known world, a period was put to his conqueſts and his life, by a Perſian named *Abu Lulua*, who ſtabbed him thrice in the belly while he was performing his devotions at Medina. The reaſon of this was, becauſe the caliph refuſed to remit him ſome part of the tribute which, according to the Mahometan cuſtom, he was obliged to pay for the free exerciſe of his religion. The Arabs, perceiving that he had killed their ſovereign, immediately ruſhed upon him; but the aſſaſſin defended himſelf ſo deſperately, that he killed ſeven of them and wounded thirteen: but at laſt one of the caliph's attendants threw his veſt over him, and ſeized him; upon which he ſtabbed himſelf, and ſoon after expired.

Omar having languiſhed three days after the wounds given him by the Perſian, expired in the 10th, 11th, or

100 Succeeded by Othman.

12th year of his reign, and after his death Othman Ebn Affan was choſen; though Ali had a better title, and ſeems indiſputably to have been the moſt virtuous, if not the only virtuous perſon, as well as the braveſt warrior, among them. He was inaugurated in the 24th year of the Hegira, nearly coincident with the year of our Lord 645.

Othman was no ſooner ſettled on the throne, than he commanded Al Mogheirah to complete the conqueſt of the territory of Hamadan; which he eaſily accompliſhed, and at the ſame time reduced Bira, a ſtrong caſtle in Meſopotamia, which either had never ſubmitted, or had revolted on the departure of the Moſlem troops out of that province. Another army, under Abdallah Ebn Amar, was alſo deſpatched into Perſia to deprive Yezdejerd of the poor remains of his dominions; and this was done ſo effectually, that the unhappy monarch was obliged to fly to Sijeſtan and abandon Perſia altogether. Arabia.

In the 27th year of the Hegira, the iſland of Cyprus was reduced by Moahwiyah; who ſoon after conquered the iſland of Aradus, and took Ancyra; after which he reduced the iſland of Rhodes, broke in pieces the famous Coloſſus, and ſold the metal of it to a Jew of Edeſſa. In the mean time another of the Arab commanders entered Iſauria, where he committed dreadful depredations, plundering many towns and villages, putting a great number of people to the ſword, and carrying off 5000 priſoners. In the 31ſt year of the Hegira, one Habib having made an irruption into that part of Armenia which was ſtill unconquered, defeated a body of the emperor's troops, purſuing them as far as Mount Caucaſus, and laying waſte all the neighbouring territory. About the ſame time alſo, Abul Abar, who had been conſtituted admiral by Moahwiyah, gave the emperor Conſtans a ſignal defeat by ſea, on the coaſt of Lycia, in which ſuch a number of Chriſtians were killed, that the neighbouring ſea was dyed with their blood.

101 Coloſſus of Rhodes deſtroyed.

But while Othman was thus carrying every thing irreſiſtibly before him abroad, he neglected to ſecure the affections of his ſubjects at home, which ſoon proved his ruin. Sedition was induſtriouſly propagated through all the provinces of the empire, and articles of acculation brought againſt the caliph. The chief of theſe were, That he had recalled one who had been baniſhed by the prophet; that he had removed Saad, an officer of diſtinguiſhed bravery, and ſupplied his place by one who drank wine, and was otherwiſe of a ſcandalous life; that he had ſquandered away vaſt ſums among his favourites; that he had removed Amru from the government of Egypt, to which he had preferred his own foſter brother; and, laſtly, that he had preſumed to ſit on the top of Mahomet's pulpit, whereas Abu Becr had always ſat on the higheſt ſtep and Omar on the loweſt. To this formidable accuſation the poor caliph pleaded guilty, and promiſed to make all the reparation in his power; but his condeſcenſion only ſerved to increaſe the inſolence of the rebels. They were however appeaſed by Ali; and public tranquillity had undoubtedly been reſtored, had it not been for Ayeſha, one of Mahomet's widows, who procured the deſtruction of the caliph by a ſcheme truly worthy of the wife of ſuch a huſband. That traitreſs, being deſirous of raiſing one of her favourites named Telha to the dignity of caliph, prevailed on Merwan the ſecretary of ſtate to write a letter to the prefect of Egypt, enjoining him to put to death Mahomet Ebn Abu Becr, with whom it was ſent, and who was to be his ſucceſſor. This letter Merwan took care ſhould be diſcovered: and Mahomet taking it for a genuine order of the caliph, publiſhed the ſuppoſed injury all over the neighbouring countries. He then marched with a body of rebels to Medina, where the innocent caliph was beſieged in his palace; and, notwithſtanding all his proteſtations, nothing leſs than his death could ſatisfy the enraged multitude. In this deplorable ſituation Othman ſent to Ali for aſſiſtance: who commanded his two ſons Haſan

102 Inſurrections againſt the caliph.

and

Arabia. and Hoſein to defend the palace gates. This they did for ſome time with fidelity enough, till finding the caliph reduced to great ſtraits for want of water, they abandoned their poſts; upon which the rebels eaſily made themſelves maſters of the palace, and cruelly murdered the caliph, in the 82d year of his age, after he had reigned 12 years. His body remained three days unburied; and was at laſt thrown into a hole made for it, without the uſual ablution, or the leaſt funeral ſolemnity.

103 He is murdered.

The arms of the Moſlems had hitherto been ſo ſucceſsful: and their conqueſts ſo rapid, that they may ſeem not only to have vied with Alexander, but to have bid fairer for univerſal monarchy than any nation either before or ſince.—The ruin of mighty empires always originates from the impoſſibility of keeping them united. Diviſions ariſe; civil wars break out; and the kingdom being weakened by theſe inteſtine feuds, the common enemies take advantage of them to ruin the whole fabric. If we conſider Mahomet, as in truth he was, not as an enthuſiaſt, but as a politician and the founder of an empire; we ſhall find him in that capacity ſuperior perhaps to any that ever exiſted. The empire of Alexander the Great, which aroſe with ſtill more rapidity than that of the Arabs, had no ſupport but from his own ambition and perſonal qualifications. While he lived, he was without a rival, becauſe all were afraid of him; but when he died, the bands of union, whereby his empire had been held together, were immediately diſſolved. His captains were not inſpired with the ſame veneration for his ſon, who was unborn at the time of his death, that they had for his father; and therefore they ſought not to conquer for him, but for themſelves; and the conſequence was that the kingdom fell to pieces the moment that he died. The ſame thing happened to the empires of Jenghiz Khan, Tamerlane, and others, who made vaſt conqueſts in a ſhort time. They erected mighty empires indeed; but their duration, we may ſay, was but momentary. The empire of the Romans was founded on a kind of enthuſiaſtic deſire of aggrandizing the city of Rome: patriotiſm became faſhionable; and as the city never ceaſed to exiſt, thoſe who conquered always had the ſame end in view, namely to exalt the republic more and more. This empire, therefore, was not only very extenſive, but very durable; though, as it was impoſſible that mankind could always continue to venerate a city, the ſame diviſions that ruined other empires at laſt brought this to an end. The foundation of Mahomet's empire ſeemed to be ſtill more firm. He was not only the king, but, we may ſay, the god of his people. Whatever enthuſiaſm people may ſhow in defending their country, nay even their neareſt relations, experience has taught us that it is greatly inferior to what is ſhown by thoſe who fight in defence of religion. This enthuſiaſm Mahomet had taken care not only to bring over to his ſide, but to exalt to its higheſt pitch, by inculcating upon his followers, that their rewards in the next world ſhould be proportionable to the fury with which they fought in this. To live at peace, except with thoſe who ſubmitted to his will, did not at all enter into his plan; and he who made no conqueſts, or at leaſt did not ſtrive to make them, was no true believer. By this means, let his empire be ever ſo much extended, the temptation to making freſh conqueſts was ſtill equally ſtrong; and not only the commanders of armies, but every private perſon, had the moſt powerful motives, to urge him towards the conqueſt of the whole world, had that been poſſible. The only thing Mahomet ſeems to have failed in was, the appointment of the ſucceſſion to the apoſtleſhip; and why he was deficient in this is inconceivable. From this one ſource proceeded the diviſions which ruined his empire when it was ſcarce erected, and of which we are now to give the hiſtory.

Arabia. Cauſes of the decline of the Moſlem empire.

Though the prophet had been ſo deficient in providing for the ſafety of his kingdom as not to name a ſucceſſor at his death; yet his ſon-in-law Ali was always of opinion that the ſucceſſion belonged of right to him; and that it ought to be, like that of other kingdoms, hereditary. This diſpoſition to render the apoſtleſhip hereditary in the family, was in all probability, what diſguſted the Moſlems with Ali; againſt whom they could otherwiſe have no objection; for he was endowed with every amiable quality; a firm believer in Mahomet; and of ſuch unparalleled ſtrength and courage, that he never declined a combat to which he was challenged, nor ever failed to come off victorious; for which reaſon he was ſtyled by his countrymen, "the lion of God."

105 Character of Ali.

On the death of Othman, however, notwithſtanding the prejudices againſt Ali, as none could pretend ſo good a right to the caliphate as he, the Arabs immediately took the oath of allegiance to him, though with an intention to break it as ſoon as poſſible, as was fully evinced by the event. The diſturbances which happened immediately on Ali's acceſſion were owing partly to the machinations of Ayeſha, who having got Othman murdered on purpoſe to raiſe Telha to the dignity of caliph, and now finding Ali unanimouſly choſen, reſolved to deſtroy him alſo. She therefore pretended great concern for the death of the late caliph, and accuſed Ali of being his murderer; but being reproved by one of the Moſlems for endeavouring to blacken an innocent perſon, when ſhe could not but know herſelf guilty; ſhe replied, that Othman's infidelity had indeed made her his enemy, but that ſhe had forgiven him upon his repentance. At the time of Ali's inauguration ſhe was at Mecca, where ſhe enjoyed a very conſiderable ſhare of influence and authority. At her inſtigation, Telha Ebn Obeidallah, and Zobeir Ebn Al Awam, began to repreſent to Ali, that the murderers of Othman ought to be brought to condign puniſhment: offering themſelves at the ſame time for that purpoſe. This they did purely to ſow diſſenſion, for they themſelves had been deeply concerned in the murder; and Ali, ſufficiently aware of their intention, told them it was impoſſible till the empire ſhould be more ſettled. Finding themſelves diſappointed in this attempt, they next begged the government of Cufa and Baſra, that they might with the greater facility extinguiſh any rebellion that ſhould happen. Here again Ali was aware of their intention; and refuſed their requeſt, under pretence that he ſtood in need of perſons of their great capacity, as counſellors, about his perſon. Then they deſired leave to perform a pilgrimage to Mecca, which the caliph could not refuſe; and they were no ſooner got there, than they ſet about raiſing an army againſt him without any provocation at all.

106 He is choſen caliph.

107 Diſturbances raiſed by Ayeſha.

This, however, was not the only ſource of diſcord

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at preſent. Ali had been diſpleaſed with the governors of provinces appointed by Othman; and therefore diſmiſſed them immediately upon his acceſſion. This was very impolitic; but he was prompted to do it by that raſhneſs and want of prudence which is inſeparable from, or rather is the very eſſence of, great courage. The conſequence of this was, that Moawiyah, governor of Syria, was, immediately upon his diſmiſſion by Ali, proclaimed caliph by the troops under his command. Thus the Moſlems were divided into two factions; the one under Moawiyah and Ayeſha, who adhered to the houſe of Ommiyah, to which Othman and Moawiyah belonged; and the other to Ali. The adherents of the houſe of Ommiyah were called *Motazalites*, or *ſeparatiſts*.

108 and Moawiyah.

109 Ali raiſes an army.

Ali, finding how matters were ſituated, and that a very ſtrong party was formed againſt him, endeavoured to ingratiate himſelf as much as poſſible with the Koreiſh; and to raiſe an army againſt Ayeſha, who had now taken the field, and even reduced the city of Baſra. He made a formal ſpeech to the people on hearing this bad news, and deſired their aſſiſtance. But though he was very much beloved on account of his perſonal merit, and the beſt orator of the age, he could not with all his eloquence for ſome time prevail on them to give a deciſive anſwer in his favour. At laſt Ziyad Ebn Hantelah ſtept to Ali of his own accord, and ſaid, "Whoſoever retreats, we will advance." Upon this two Anſars, doctors of the law, ſtood up, and pronounced Ali innocent of the death of Othman; which deciſion ſoon induced the Anſars and the body of the people to eſpouſe his quarrel. He then left Medina with a body of 900 men, and advanced to Arrabah, where he was joined by ſeveral other parties. From this place he wrote to the people of Cufa and Medina, preſſing them to ſend him farther aſſiſtance, and to diſpoſe the Motazalites to an accommodation. From Medina he very ſoon obtained a large ſupply of horſes, arms, and other neceſſaries; and from Cufa he obtained with difficulty a reinforcement of 8000 men.

Being greatly animated by this ſeaſonable ſupply, Ali, advanced towards Baſra, where the troops of Ayeſha were ready to receive him. Both parties ſeemed averſe to an engagement; and Ayeſha began to be very much intimidated at the ſight of Ali's army, which, however, was inferior to her own: but, by ſome means or other, a battle was at laſt brought about, in which Ayeſha was defeated and taken priſoner. The only remarkable effort that was made by the troops of Ayeſha in this engagement, was in defence of her perſon. It is ſaid, that no fewer than 70 men who held her camel by the bridle, had their hands cut off ſucceſſively; and that the pavilion in which ſhe ſat was ſo full of darts and arrows, that it reſembled a porcupine. Ayeſha was treated very kindly by Ali, who at firſt ſet her at liberty, but afterwards confined her to her houſe at Medina, and commanded her to interfere no more with ſtate affairs, though he ſtill allowed her to perform the pilgrimage to Mecca.

110 He defeats and takes Ayeſha priſoner.

After this victory, Ali had no enemies to contend with either in Arabia, Irak, Egypt, Perſia, or Khoraſan. A ſtrong party, however, ſtill remained in Syria, headed by Moawiyah, who founded his claims to the caliphate on a pretended declaration of Othman that he ſhould be his ſucceſſor. In this defection he was joined by Amru Ebn Al As, who had obtained a promiſe of the government of Egypt, provided Moawiyah could be advanced to the dignity of caliph.

Ali, with his uſual good nature, endeavoured to bring the rebels to a ſenſe of their duty, and often ſent propoſals of accommodation to Moawiyah; but he ſtill remained inflexible. Perceiving, therefore, that it would be neceſſary to invade Syria, he entered that country with an army of 70,000 men, while Moawiyah advanced to meet him with 80,000; and by repeated reinforcements Ali's army at laſt amounted to 90,000 and Moawiyah's to 120,000. The two armies came in ſight of each other towards the cloſe of the 36th year of the Hegira, when they ſeemed ready to enter upon action; but only ſome ſkirmiſhes happened between them, wherein neither party ſuſtained any conſiderable loſs. The firſt month of the 37th year was ſpent in fruitleſs negotiations; but in the ſecond month they began to fight in different parties, without ever hazarding a general engagement. Theſe battles continued, according to ſome, for 40 days, and according to others, 110. Moawiyah's loſs amounted to 45,000 men, and Ali's to 25,000, among whom were 26 who had been intimately acquainted with Mahomet himſelf, and were dignified with the title of *The Companions*. The moſt famous of theſe was Ammar Ebn Yaſar, Ali's general of horſe, who was upwards of 90 years of age, and was highly eſteemed by both parties. The loſs of this general ſo exaſperated Ali, that he charged the Syrians with a body of 12,000 men, broke them, and challenged Moawiyah to fight him in ſingle combat. This challenge Moawiyah declined, inſiſting that it was not a fair one, as Ali could not but be ſenſible of his ſuperiority in ſtrength. As the challenge was given in the hearing of both armies, Amru inſiſted that Moawiyah could not in honour refuſe it; but the coward made no other reply than that Amru aſpired to the caliphate himſelf, and wanted to enjoy it after his death. The battle being now renewed with great fury, Moawiyah's forces were puſhed to their camp; which had certainly been taken, had not Amru bethought himſelf of the following ſtratagem to retrieve Moawiyah's affairs, when he ſeemed on the very brink of deſtruction. He ordered ſome of his men to fix copies of the Koran to the points of their lances, and carry them to the front of the battle, crying out at the ſame time, "This is the book that ought to decide all differences between us; this is the book of God between us and you, that abſolutely prohibits the effuſion of Moſlem blood." This produced the deſired effect. The caliph's troops threw down their arms, and even threatened him with death if he did not found a retreat; which he therefore found himſelf obliged to do, and thus had a deciſive victory wreſted out of his hands.

111 Moawiyah challenged to a ſingle combat by Ali.

112 Amru's ſtratagem.

According to this new mode of deciſion, the two parties were each to chooſe their arbitrator; but even this was not allowed to Ali, though Moawiyah had liberty to chooſe Amru Ebn Al As. The troops of Irak, not content with offering ſo groſs an affront to the caliph, inſiſted on naming for his arbitrator Abu Muſa Al Aſhavi; a very weak man, and one who had already betrayed him. The conſequence of this appointment was, that Ali was depoſed by both the arbitrators; and he accordingly dropt his title to the caliphate, but without

113 Ali depoſed

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After his deciſion, Ali retired to Cufa; where he was no ſooner arrived, than 12,000 of theſe troops who had themſelves forced him to accept of the arbitration, pretending to be offended with the ſtep he had taken, revolted from him. Theſe were called *Kharejites*, that is, rebels or revolters: and *Mohakkemites*, or judiciarians, becauſe they affirmed that Ali had referred to the judgment of men what ought to have been only referred to the judgment of God; and, therefore, that inſtead of keeping the peace he had made with Moawiyah, he ought to purſue his enemies, who were likewiſe the enemies of God, without mercy. To this Ali replied, That as he had given his word, he ought to keep it; and, in ſo doing, he only followed what was preſcribed by the law of God. The Kharejites replied, That God was the only judge between him and Moawiyah, and that conſequently he had committed an enormous ſin, of which he ought ſincerely to repent. This irritating Ali, he with ſome warmth replied, That if any ſin had been committed on this occaſion, it was by themſelves, who had forced him to take the ſteps of which they now complained. This anſwer not proving agreeable, they choſe for their general Abdallah Ebn Waheb, who appointed for their rendezvous Naharwan, a town ſituated between Waſet and Bagdad, about four miles to the eaſtward of the Tigris. Here they aſſembled an army of 25,000 men; and Ali, having tried gentle methods ineffectually, at laſt marched againſt them in perſon. Before he attacked them, however, he planted a ſtandard without the camp, and made proclamation by ſound of trumpet, that whoever ſhould repair to it ſhould have quarter, and whoever would retire to Cufa ſhould find a ſanctuary there. This had ſuch an effect, that Abdallah's army was ſoon reduced to 4000 men, with whom he ruſhed upon the caliph's forces; but all of them were cut in pieces, except nine who eſcaped.

114 He defeats the Kharejites.

Had Ali marched againſt Moawiyah immediately after the defeat of the Kharejites, and while his troops were fluſhed with victory, he had probably reduced him entirely: but by allowing his troops to refreſh themſelves, they all deſerted him, and Moawiyah's party had an opportunity of gathering ſtill more ſtrength; and though Moawiyah's troops often made incurſions into the territories of Ali, the latter ſeems afterwards to have acted only on the defenſive. At laſt the Kharejites, imagining that it would be for the good of the Moſlem affairs, that Moawiyah, Ali, and Amru, were dead, deſpatched aſſaſſins to murder all the three. Moawiyah was wounded, but recovered; Amru's ſecretary was killed by miſtake; but Ali was wounded with a poiſoned ſword, which occaſioned his death. The aſſaſſin was taken, and Ali would have pardoned him had he recovered, but ordered him to be put to death if he died, that he might, as he ſaid, "have an immediate opportunity of accuſing him before God." Even in this order he ſhowed his uſual clemency, as he ordered the aſſaſſin to be deſpatched at one blow, and without torture of any kind.

115 They attempt to murder Ali, Amru, and Moawiyah.

116 Ali aſſaſſinated.

Thus fell Ali, the moſt virtuous of all the Mahometan caliphs, after he had reigned near five years, and lived 63. He was preſſed by thoſe about him to nominate a ſucceſſor before he died; but this he declined, ſaying, he would follow the example of the Apoſtle of God, who had not named any: and, as his ſon Haſan inherited his father's piety, though not his courage, he was declared caliph without any ſcruple. Moawiyah, however, behaved in ſuch a manner towards him, as ſhowed his hoſtile intentions; and thoſe about Haſan preſſed him to declare war immediately. This Haſan, who was of an exceeding mild and peaceable diſpoſition, could hardly be perſuaded to do; and though he at laſt took the field, yet he immediately perceived his incapacity to diſpute the empire with Moawiyah; and therefore reſigned it, in ſpite of all the remonſtrances of his friends, to a traitor, who cauſed him after ſome years to be poiſoned by his wife.

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117 Succeeded by Haſan:

118 who reſigns the caliphate to Moawiyah.

Moawiyah being thus left ſole maſter of the Moſlem empire, found himſelf under the neceſſity of reducing the Kharejites, who were his enemies as well as Ali's, and had now gathered together a conſiderable army. Againſt theſe rebels the caliph would have deſpatched Haſan, but that prince refuſed; upon which he ſent the Syrian troops againſt them, who were defeated: however the Cufans, being at laſt perſuaded to take up arms, ſoon extinguiſhed the rebellion, and ſettled Moawiyah more firmly than ever on the Moſlem throne. In the 48th year of the Hegira, the caliph ſent his ſon Yezid with a powerful army to beſiege Conſtantinople. In this expedition he was attended by three or four of the *Companions*, who, notwithſtanding their age, were prompted by zeal to undergo incredible fatigues. The Moſlem forces, too, though they ſuffered extremely, were animated to ſurmount all difficulties by a tradition, according to which the prophet in his lifetime declared, "That the ſins of the firſt army that took the city of Conſtantinople ſhould be forgiven." Concerning the particulars of this expedition we are in the dark: only, in general, that it proved unſucceſsful; and in it Abu Ayub, who had been with Mahomet at the battles of Bedr and Ohod, loſt his life. His tomb is held in ſuch veneration by the Moſlems, that the ſultans of the Ottoman family gird their ſwords on at it on their acceſſion to the throne. In the 54th year of the Hegira, the Arabs made an irruption into Bukharia, and defeated a Turkiſh army that oppoſed them. The Turks loſt a great number of men; and the queen, who commanded in perſon, with great difficulty made her eſcape. She had only time to put on one of her buſkins; the other fell into the hands of the Arabs, who valued it at no leſs than 2000 dinars. About this time alſo, according to the Greek hiſtorians, a treaty was concluded between the emperor and the Moſlems, whereby the latter were allowed to keep the territories they had ſeized; in conſideration of which they were to pay 3000 pounds weight of gold, 50 ſlaves, and as many choice horſes. To theſe diſhonourable conditions they were obliged to ſubmit, in conſequence of their late unſucceſsful expedition to Conſtantinople, and ſome other defeats they had received. This peace was to continue for 30 years. The next year, Moawiyah, having conferred the government of Khoraſan upon Saad, Othman's grandſon, that general, ſoon after his promotion, paſſed the Jihun, or Amu, the Oxus of the ancients, and advanced with a body of troops to Samarcand, which opened its gates to him on his approach; ſoon after which he defeated an army of Uſbeck Tartars, and marched directly to Tarmud, or Tarmid,

119 Conſtantinople beſieged without ſucceſs.

120 Turks defeated.

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mid, which alſo ſurrendered without oppoſition. The 57th year of the Hegira was remarkable for nothing but vaſt ſwarms of locuſts, which did incredible damage in Syria and Meſopotamia; and great diſcontents on account of the caliph's having nominated for his ſucceſſor his ſon Yezid, a perſon of ſcandalous life, and no way worthy of the throne. The 58th year of the Hegira was rendered remarkable by the death of Ayeſha, Mahomet's widow; and the 60th by that of Moawiyah, after having reigned, from Haſan's reſignation, nineteen years, three months, and five days; but concerning his age authors are not agreed. He was interred at Damaſcus, which was made the reſidence of the caliphs as long as the houſe of Ommiyah continued on the throne.

121 Moawiyah dies.

122 Succeeded by Yezid.

Yezid was proclaimed, in conſequence of his nomination, the ſame day his father died. His inauguration was performed on the new moon of the month Rajeb, correſponding to April 7. 680. Immediately after his election, he wrote to Al Walid, governor of Medina, to ſeize Hoſein, the remaining ſon of Ali, and Abdallah Ebn Zobeir, in caſe they refuſed to acknowledge his right. He accordingly tendered the oath of allegiance to Hoſein, who returned an evaſive anſwer, and found means to eſcape to his own houſe. As for Abdallah, he delayed waiting upon the governor, under various pretences, for 24 hours; after which he made his eſcape to Mecca; hither Hoſein followed him; but received an invitation from the people of Cufa, who promiſed to aſſiſt him in vindicating the rights of his father Ali and himſelf. In the mean time, Yezid, being informed of Al Walid's negligence in ſuffering Abdallah and Hoſein to eſcape, removed him from his employment, appointing in his room Amru Ebn Saad, at that time commandant of Mecca. The new governor immediately deſpatched againſt Abdallah Amer Ebn Zobeir, Abdallah's own brother, who mortally hated him: but Abdallah having engaged Amer in the field, defeated and took him priſoner; which greatly raiſed his reputation at Medina, although Hoſein's ſuperior intereſt among them ſtill rendered him incapable of aſpiring to the caliphate by himſelf.

123 Hoſein and Abdallah refuſe to acknowledge him.

While Abdallah was thus ſtrengthening himſelf at Mecca and Medina, Hoſein was doing the ſame at Cufa. On the firſt notice of their inclinations, he had ſent to them Moſlem Ebn Okail, to whom, as repreſentative of the ſon of Ali, they had taken an oath of allegiance, and were now very preſſing on Hoſein to honour their city with his preſence. Beſides this, Hoſein was ſupported by the forces of Irak, who retained a great veneration for the memory of his father, and had all along conſidered the government of Moawiyah as a downright uſurpation.

Notwithſtanding all theſe ſteps taken at Cufa in favour of Hoſein, the deliberations of the conſpirators were carried on with ſuch ſecrecy, that Al Nooman, the governor, continued a ſtranger to them, even after the Cufans had determined immediately to enter upon action with an army of 18,000 men. At laſt, however, he began to be rouſed from his lethargy; but Yezid being diſpleaſed with his conduct, removed him from his government, appointing for his ſucceſſor Obeidallah Ebn Ziyad. This governor entered the city in the evening, and was received with all poſſible demonſtrations of joy by the Cufans, who miſtook him for Hoſein, owing to a black turban which he had on his head, reſembling that which Hoſein uſually wore. His firſt care was to extinguiſh the ſedition that had been excited by Moſlem. In order to this, he commanded a truſty ſervant to diſguiſe himſelf, and perſonate a ſtranger come out of Syria to ſee the inſurrection of Hoſein: that he might get admiſſion into Moſlem's houſe, and penetrate all his councils. This commiſſion was faithfully executed; and Obeidallah underſtanding that Moſlem lodged in the houſe of one Sharik, who was then ſick, ſent a meſſenger to Sharik, letting him know that he intended to viſit him on a certain day. Sharik immediately came to a reſolution to receive him, and appointed Moſlem a place in the corner of the room whence he might ruſh out upon Obeidallah and kill him. The viſit was accordingly made; but Moſlem's heart failing him, the governor eſcaped: Hani, however, in whoſe houſe Moſlem had firſt lodged, was impriſoned by Obeidallah. Upon the news of this, Moſlem aſſembled about 4000 men, and beſieged Obeidallah in the caſtle. The governor, however, not in the leaſt diſpirited, made a ſpeech to Moſlem's followers; which had ſuch an effect upon them that they all deſerted him except about 30. By the favour of the night, Moſlem eſcaped to a poor woman's cottage in the neighbourhood; but being betrayed by her ſon, Obeidallah ſent a detachment of 80 horſe to ſeize him. Moſlem made a gallant reſiſtance, and thrice cleared the houſe of them; but being at laſt overpowered with numbers, and grievouſly wounded, he was taken and brought to Cufa. While on the road, he endeavoured to ſend an account of his bad ſucceſs to Hoſein, then, as he ſuppoſed, on the road to Cufa; but without ſucceſs. When arrived at the caſtle he begged a draught of water: but thoſe who ſtood by told him he ſhould have none till he drank the hamim, or boiling liquor, which the Mahometans pretend is drunk by the damned in hell; and ſoon after this, being brought before the governor, he was beheaded along with Hani, and both their heads ſent as a preſent to Yezid.

124 Hoſein's obſtinacy.

Hoſein, in the mean time, was preparing to ſet out for Cufa, having received the moſt favourable advices from Moſlem, of whoſe fate he was ignorant, and who had ſent him a liſt of 140,000 men that were ready to obey his orders. This the wiſeſt of his friends repreſented as a deſperate enterpriſe, and entreated him to drop it, or at leaſt to defer his journey till he ſhould be better aſſured of ſucceſs: but Hoſein was deaf to all ſalutary counſel; nay, he would not, by the moſt earneſt entreaties, be prevailed upon to forbear taking his wives and children along with him. The conſequences of this obſtinacy may eaſily be imagined: Obeidallah deſpatched firſt 1000, and then 5000 men againſt him; with orders, however, not to offer any violence to him provided he ſubmitted himſelf. To theſe terms the infatuated Hoſein would not agree: he offered indeed to return home, if Obeidallah would permit; but that not being granted, he deſperately engaged the troops of Obeidallah, and was, after long reſiſtance, cut in pieces with all his men. His head was brought to Obeidallah, who ſtruck it over the mouth with a ſtick, and treated it with great contempt. He was alſo inclined to have put his family to death: but probably feared an inſurrection, as the people of Cufa expreſſed great

125 He is defeated and killed.

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great reſentment on account of Hoſein's death; nor was it at all agreeable to the caliph Yezid, who treated the family of the unfortunate Hoſein with the greateſt kindneſs.

This year, the 61ſt of the Hegira, Yezid appointed Salem Ebn Ziyad governor of Khoraſan; who, ſoon after entering upon the government, made an irruption into the Turkiſh territories. He took his wife along with him in this expedition, who was delivered of a child in the neighbourhood of Samarcand; on which occaſion ſhe is ſaid to have borrowed ſome jewels from the prince of Sogd's lady, which ſhe afterwards carried off with her. In the mean time Salem detached Mohalleb with a conſiderable body of troops to Khowarazm, the principal city of the Turks or Tartars in thoſe parts, from which he extorted the immenſe ſum of 50,000,000 pieces of money; from whence advancing to Samarcand, he forced the inhabitants of that city alſo to pay him an immenſe ſum; and then retired, with little loſs, into the province he governed.

In the mean time Abdallah Ebn Zobeir, finding himſelf, by the death of Hoſein, at the head of the partizans of the houſe of Haſhem, who were greatly oppreſſed by Yezid, began in earneſt to aſpire to the caliphate. As he had therefore never owned the authority of Yezid, he now openly declared againſt him, and was proclaimed caliph at Medina ſoon after the arrival of Hoſein's family in that place. Soon after his inauguration, to render himſelf the more popular, he expatiated on the circumſtances of Hoſein's death, which indeed were very tragical, and repreſented the Cufans as the moſt abandoned and perfidious villains upon earth. This went ſo well down with the citizens of Mecca and Medina, that they flocked to him in great numbers, ſo that he ſoon found himſelf at the head of a conſiderable force. The caliph Yezid being informed of his progreſs, ſwore he would have him in chains; and accordingly ſent a ſilver collar for him to Merwan, then governor of Medina: but the intereſt of Abdallah was now ſo ſtrong, that he laughed at the menaces both of the caliph and Merwan. Nay, the governor of Mecca, though he ſecretly hated him, thought it good policy, as matters then ſtood, to keep up a good underſtanding with Abdallah: but this coming to the ears of Yezid, he depoſed the governor; appointing in his place Walid Ebn Otbah, a man of known fidelity, and a bitter enemy of Abdallah. The new governor, therefore, immediately on his acceſſion, uſed all his art and ſkill to circumvent Abdallah; but to no purpoſe as the latter was always on his guard. This conduct, however, giving him great diſguſt, as well as terrible apprehenſions, he wrote to the caliph, informing him that all the diſturbances were owing to the untractable diſpoſition of Walid; and that, if he would ſend a perſon of a different character, peace would ſoon be reſtored. This letter the caliph very injudiciouſly gave ear to, and diſmiſſed his faithful governor, appointing in his room one who was totally unqualified for that poſt. The people of Medina now having freſh intelligence of Yezid's diſſolute manner of life, renounced their allegiance to him, and formally depoſed him in a very ſingular manner. After they had aſſembled in the moſque, about the pulpit there, one of them ſaid, "I lay aſide Yezid as I do this turban," and immediately threw his turban on the ground. Another ſaid, "I put away Yezid as I do this ſhoe," caſting away his ſhoe at the ſame time. Theſe examples being followed by others, there was a large heap of ſhoes and turbans almoſt inſtantly formed upon the ſpot. They then diſmiſſed Yezid's governor, and baniſhed from the city all the friends and dependents of the houſe of Ommiyah. Theſe, to the number of about 8000, took refuge in the houſe of Merwan Ebn Al Hakem, where they were ſo cloſely beſieged by Abdallah's party, that they found themſelves obliged to ſend to Yezid for immediate aſſiſtance; acquainting him, that if they were not ſuccoured, they muſt all inevitably periſh. The caliph, though he wondered that ſuch a number of men ſhould ſuffer themſelves to be ſo cooped up without making the leaſt reſiſtance, deſpatched Moſlem Ebn Okba to Medina, with a conſiderable body of troops, to quell the diſturbances. He ordered him to ſpare Ali the ſon of Hoſein and his family, as they had no hand at all in the diſturbances: then he was to ſummon the town of Medina to ſurrender for three days ſucceſſively; which if they refuſed, he was to take it by ſtorm, and give it up to be plundered by the ſoldiers for three whole days.

The inhabitants of Medina being now ſenſible of their danger, ſuffered the friends of the houſe of Ommiyah to withdraw quietly out of the city; though before they departed, a promiſe was extorted from them not to appear in arms againſt the reigning faction. Moſlem, in the mean time, advanced towards the city at the head of 5000 foot and 12,000 horſe; and having ſummoned it according to his inſtructions, upon its refuſal made the neceſſary preparations for an attack. The garriſon, however, for a conſiderable time, made a vigorous defence; but at laſt, moſt of the Anſars and principal officers being killed, the Arabs propoſed a capitulation. Moſlem, however, would hearken to no terms, and inſiſted on their ſurrendering at diſcretion; which being refuſed, he entered the city after a faint reſiſtance. Ali was treated with great reſpect; but all the men that had carried arms were put to the ſword, and Moſlem ſuffered his troops to raviſh 1000 women, and to pillage the city for three days ſucceſſively. Thoſe that eſcaped the ſlaughter he forced to acknowledge themſelves the ſlaves and vaſſals of Yezid. For this extreme ſeverity he was ſurnamed by the Arabs *Al Muſrif*, or *The extravagant*, and ever after conſidered as an impious perſon, eſpecially as the prophet had declared that the wrath of God ſhould moſt certainly remain upon thoſe who ſacked or plundered the city of Medina.

After the reduction of Medina, Moſlem directed his courſe to Mecca, where Abdallah then reſided; but he died by the way, and the command of the troops devolved upon Hoſein Ebn Thamir Al Selwi. This general advanced to Mecca, which he beſieged for 40 days, battering the town with ſuch fury, that he beat down a great part of the famous temple there, and burnt the reſt; nor would the city itſelf have eſcaped the ſame fate, had not an end been put to the war by the arrival of certain accounts of the death of Yezid, who departed this life in the 64th year of the Hegira, anſwering to the year 684 of the Chriſtian era, having lived 39, and reigned three years and ſix or eight months. On the news of his death, Hoſein offered to take

126 Abdallah proclaimed caliph.

127 Yezid formally depoſed.

128 Medina taken and plundered by the caliph's forces.

129 Yezid dies.

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take the oath of allegiance to Abdallah; but the latter at that time durſt not truſt him, of which he had afterwards ſufficient reaſon to repent.

130 Moawiyah II. proclaimed caliph, and reſigns.

Yezid was ſucceeded by his ſon Moawiyah II. who was proclaimed caliph at Damaſcus the ſame day that his father died; but being of a weakly conſtitution, and unable to bear the fatigues of government, reſigned the crown ſix weeks after his inauguration, and died ſoon after without naming a ſucceſſor.

This abdication having left the Moſlem empire abſolutely without a maſter, great commotions enſued. On the death of Yezid, Obeidallah Ebn Ziyad, governor of Baſra, repreſented to the citizens that they ought to chooſe a protector till a new caliph ſhould be choſen; and if the perſon ſo choſen ſhould be diſagreeable to them, they might then remain in a ſtate of independency under the protector whom they had choſen. The inhabitants, perceiving the drift of this ſpeech, complimented him with that honour; which he accepted with ſeeming difficulty: but ſending a deputy to Cufa, the inhabitants of that city not only refuſed to acknowledge his authority, but threw duſt and gravel at his meſſenger. This coming to the ears of the people of Baſra, they not only deprived Obeidallah of the dignity they had newly conferred upon him, but even expelled him the city. Nor could he prevail upon the Najari, a tribe of Anſars, to eſpouſe his quarrel, nor even upon his own relations, though he diſtributed among them great part of the ſixteen millions of pieces of money which he had found in the treaſury of Baſra, and kept the remainder to himſelf. Nay, ſo odious had he rendered himſelf to all ranks, on account of his cruelties, particularly the death of Hoſein the ſon of Ali, that his brother Abdallah was unable to protect him from the fury of the populace, though he kept him concealed in women's clothes, and diſtributed among the mob 200,000 pieces of money. He was therefore at laſt conſtrained to leave the city, attended by a guard of 100 men. Immediately after his departure, the mob plundered his houſe, and purſued him, ſo that he was obliged to exchange his camel for an aſs, and thus with the utmoſt difficulty eſcaped into Syria.

131 Obeidallah forced to fly into Syria.

In the mean time, Hoſein Ebn Thamir, being returned into Syria with the forces under his command, gave a faithful account of the ſituation of affairs in Arabia to Merwan Ebn Al Hakem. He alſo acquainted him of the offer he had made to Abdallah of the oath of allegiance, which the latter had refuſed, or at leaſt would not come to Damaſcus in order to be inveſted with the ſupreme authority there. On this account he adviſed Merwan to take care of himſelf and the reſt of the houſe of Ommiyah, who had fled to Damaſcus after their expulſion from Medina. On this diſcourſe Merwan was inclined to ſubmit to Abdallah; but was diverted from it by Obeidallah, who inſiſted that no ſuperior ought to be acknowledged by Merwan, who was at the head of the Koreiſh. The people of Damaſcus had conſtituted Dahak Ebn Kais their protector, who inclined to Abdallah. The Baſrans were at this juncture entirely in tumult and confuſion, not being able to agree about a protector after the expulſion of Obeidallah; ſo that at laſt they wrote to Abdallah, offering him the government of their territory. This he accepted, but could not be prevailed upon to ſtir from Mecca: nor could Merwan be perſuaded to ſuffer any of the Syrians to perform the pilgrimage to Mecca, leſt they ſhould join Abdallah, and thereby contribute to his exclution from the throne.

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In the midſt of this confuſion Abdallah might have eaſily ſecured the caliphate to himſelf, had he not with the utmoſt imprudence as well as inhumanity given orders for the extermination of the houſe of Ommiyah. This ruined his affairs; for they being now obliged to provide for their own ſafety, Merwan was proclaimed caliph at Damaſcus; and thus the whole Moſlem empire was rent into two potent factions, the one under Merwan and the other under Abdallah.

We have already obſerved, that Dahak Ebn Kais inclined to favour Abdallah. This he continued to do after Merwan was proclaimed caliph, inſomuch that a battle ſoon enſued between his followers and thoſe of Merwan, in which Dahak was defeated and killed; and thus Merwan became maſter of all the province of Syria. Soon after this victory, Merwan advanced with a conſiderable body of troops towards Egypt; but ſent before him Amru Ebn Said with a detachment, in order to facilitate his paſſage. That general having defeated Abdalrahman, Abdallah's lieutenant, in ſeveral briſk actions, he at laſt ſurrendered the whole country to Merwan for a ſum of money, and retired with the Arabs under his command to Hejaz. The Syrian troops, therefore, immediately took poſſeſſion of that country, and obliged the inhabitants to take an oath of allegiance to Merwan; who having appointed his ſon Abdalaziz to preſide over Egypt, returned with the greateſt part of his forces to Damaſcus. Here he was informed that Abdallah had deſpatched againſt him his brother Muſab with a conſiderable army. Againſt him Merwan deſpatched Amru Ebn Said; who having ſoon come up with him, gave him a total defeat, and diſperſed his troops in ſuch a manner that Muſab found it impoſſible to rally them again.

133 Abdallah's forces defeated by Merwan's.

134 The Cufans revolt.

In the 65th year of the Hegira, the inhabitants of Cufa, pretending to be ſeized with remorſe of conſcience for their treachery to Hoſein the ſon of Ali, raiſed an inſurrection againſt both the caliphs, and therefore aſſembled a body of 16,000 men, under the command of one Soliman, who was to revenge the death of Hoſein upon Obeidallah Ebn Ziyad and his adherents. But while Soliman and his troops remained yet inactive, Al Mokhtar, who had ſerved under Abdallah, and was diſguſted at not having been promoted as he expected, arrived at Cufa, and repreſenting the incapacity of Soliman, who indeed appears to have been totally unfit for ſuch an enterpriſe, offered to take the command upon himſelf. This, however, was refuſed; and as Al Mokhtar had no opinion of Soliman's military capacity, he found means to draw off 2000 of his troops; while 10,000 more choſe rather to violate the oaths they had taken, than run the riſk of being cut to pieces by a ſuperior enemy. Soliman, however, put a good face upon the matter; and, telling his troops that they were to fight for another world and not this, ſet forward to invade Syria with the 4000 who remained with him: but being advanced as far as Ekſas upon the Euphrates, he found that he had loſt 1000 men by deſertion; nor was he joined by the Separatiſts of Baſra and Al Madayen, though they had promiſed him a reinforcement. Firmly perſuaded, however,

135 Joined by Al Mokhtar.

136 Soliman's folly and infatuation.

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however, that his cauſe was the cauſe of heaven, Soliman continued his march all night, and next day arrived at the tomb of Hoſein, where his men performed their devotions with ſuch enthuſiaſm of penitence, that one preſent ſwore he never ſaw ſuch crowding about the black ſtone in the temple of Mecca itſelf.—Continuing ſtill to advance, he received a friendly letter from Abdallah Ebn Yezid, the governor of Cufa, adviſing him to return, and repreſenting to him the folly of engaging ſo powerful an army as would be ſent againſt him, with a handful of men: but Soliman, imagining that he was only recalled in order to ſupport Abdallah Ebn Zobeir in his pretenſions to the caliphate, perſiſted in his reſolution of penetrating into Syria. He told his troops, that they would never be nearer the two Hoſeins (Hoſein, and his brother Haſan, to whom alſo the Shiites gave that name) than they were at preſent; and that ſhould they at this time meet with death, they would be in a ſtate of repentance, and conſequently could never die in a more proper time; and after this ſpeech, continuing ſtill to advance, he was at laſt met by Obeidallah at the head of 20,000 horſe, who, after an obſtinate engagement, cut to pieces Soliman and all his troops.

137 He is cut in pieces with all his men.

138 Merwan dies.

Soon after this deciſive action died the caliph Merwan, after he had reigned eleven months. He is ſaid by ſome authors to have been poiſoned by his wife Zeinab, Moawiyah's widow. Her he had married, with a promiſe that her ſon Khaled ſhould ſucceed him; but afterwards altering the ſucceſſion in favour of his own ſon Abdalmalec, young Khaled reproached him with his breach of promiſe: upon this Merwan calling him *baſtard*, the child complained to his mother; who, to be revenged for this affront, is ſaid to have poiſoned him, or ſmothered him with a pillow.

In the beginning of the caliphate of Abdalmalec, Al Mokhtar, who had been impriſoned by the governor of Cufa, was releaſed at the interceſſion of Abdallah Ebn Omar, who had married his ſiſter. The year following, having put himſelf at the head of the Shiite ſectaries, he ſent propoſals of alliance to Abdallah Ebn Zobeir, but he, juſtly ſuſpecting his ſincerity, by a ſtratagem cut off near 3000 of his men. Upon this diſaſter, Al Mokhtar, fearing the houſe of Ali might be intimidated, ſent a letter to Mahomet Ebn Hanifyah, one of that family, in which he offered his aſſiſtance with a powerful army. This offer Mahomet declined, declaring himſelf only for pacific meaſures; but though he and all the reſt of Ali's family behaved in the moſt peaceable manner, Abdallah did not think himſelf ſafe till they owned his authority. He therefore impriſoned them, together with 17 of the principal citizens of Cufa, whom he threatened to put to death, and afterwards burn their bodies, if they did not within a limited time take an oath of allegiance to him. Al Mokhtar being informed of the diſtreſſed ſituation they were in, ſent a body of 750 horſe to Mecca, under Abu Abdallah, to releaſe them. That general not only executed his orders with great bravery, but took Abdallah himſelf priſoner, whom he would have cut to pieces on the ſpot, had he not been releaſed at the interceſſion of Mahomet, who for the preſent adjuſted the differences to the mutual ſatisfaction of all parties. After this reconciliation, Abu Abdallah, or rather Mahomet himſelf, diſtributed among 4000 of Ali's friends a ſum of money brought for that purpoſe, in order to indemnify them for the loſſes they had ſuſtained. Thus the friends of Ali were happily delivered, when only two days of the time granted them by Abdallah remained, and a ſufficient quantity of wood and other combuſtibles was collected, in order to conſume their bodies. Notwithſtanding the reconciliation, however, that had lately taken place, Mahomet Ebn Hanifyah thought proper to poſt himſelf on a mountain near Mecca with a body of 4000 men.

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130 Narrow eſcape of the family of Ali.

The Cufans having received advice before Merwan's death, that he had ſent Obeidallah with a powerful army towards their city, and even given him permiſſion to plunder it in caſe it ſhould be taken, appointed Yezid Ebn Ares, a man of undaunted courage, to oppoſe him; but Merwan dying before Obeidallah could execute his commiſſion, an end was put for the preſent to this expedition. The memory of it, however, ſtill remained; and Al Mokhtar, to whom Obeidallah was perſonally obnoxious, aſſembled a body of troops to act offenſively againſt him, and even againſt the Syrian caliph himſelf in caſe he ſhould ſupport Obeidallah. Among other preparations for this enterpriſe, Al Mokhtar cauſed a kind of portable throne to be made, telling his troops, that "it would be of the ſame uſe to them that the ark was to the children of Iſrael." It was therefore carried on a mule before the troops that were to march againſt Obeidallah, and the following prayer ſaid before it: "O God! grant that we may live long in thy obedience; help us; and do not forget us, but protect us." This expedient was ſo well adapted to the hot-headed enthuſiaſts who compoſed Al Mokhtar's army, that they attacked Obeidallah's camp, defeated him, and gained a complete victory. Obeidallah himſelf was killed in the action, his head ſent to Al Mokhtar, and his body reduced to aſhes.—By this victory the ſectaries were rendered ſo formidable, that Niſibin or Niſibis, and ſeveral other cities, ſurrendered to them without oppoſition. They now began to entertain thoughts of depoſing both the caliphs, and placing on the Moſlem throne one of the family of Ali; but all their towering hopes were ſoon fruſtrated by the defeat and death of Al Mokhtar by Muſab brother to Abdallah Ebn Zobeir. Al Mokhtar, after being defeated in a general engagement by Muſab, fled to the caſtle of Cufa, where he defended himſelf with great bravery for ſome time; but being at laſt killed, his men, to the number of 7000, ſurrendered at diſcretion, and were all of them put to the ſword on account of the outrages they had committed.

140 Impiety of Al Mokhtar.

141 Obeidallah defeated and killed.

142 Al Mokhtar defeated and killed by Muſab.

The next year, the 68th of the Hegira, the Azarakites, ſo denominated from Nafe Ebn Al Azarak, the author of their ſect, having aſſembled a conſiderable force, made an irruption into Irak. They advanced almoſt to the gates of Cufa, and penetrated to Al Madayen. Being ſworn enemies of the houſe of Ommiyah, and acknowledging no government, ſpiritual or temporal, they committed terrible ravages in every part of the Moſlem territories through which they paſſed. They carried their exceſſes to ſuch a height as to murder all the people they met with, to rip open women with child, and commit every ſpecies of cruelty that could be invented upon the inhabitants without diſtinction. The governor of Mawſel and Meſopotamia, being

143 Horrid cruelties committed by the Azarakites.

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144 They are defeated and diſperſed.

The next year, being the 69th of the Hegira, Abdalmalec left Damaſcus to march againſt Muſab. In his abſence he left Amru Ebn Said governor of the city; but he immediately ſeized upon it for himſelf, which obliged the caliph to return. After ſeveral ſkirmiſhes had happened between ſome detachments of the caliph's troops with thoſe of Amru, a pacification was concluded at the interceſſion of the women: but Abdalmalec barbarouſly put Amru to death with his own hand, notwithſtanding his promiſe; and was immediately ſeized with ſuch a tremor, that he loſt the uſe of almoſt all his faculties, and was obliged to be laid in bed. In the mean time the palace was attacked by Yahyah, Amru's brother, at the head of 1000 ſlaves. After a warm diſpute, they forced open the gates, killed ſeveral of the gaurds, and were upon the point of entering the palace, when the people within threw Amru's head among them. This ſo cooled their ardour, that they deſiſted from the attempt; and ſome money having been afterwards diſtributed among them they retired. So great, however, was Abdalmalec's avarice, that after the tumult was appeaſed, he recalled all the money which had been diſtributed, and commanded it to be depoſited in the public treaſury.

145 Barbarity of Abdalmalec.

146 Diſgraceful treaty with the Greeks.

In the 70th year of the Hegira, the Greeks made an irruption into Syria; and Abdalmalec having occaſion for all his forces to act againſt Abdallah Ebn Zobeir, was obliged to pay a tribute of 1000 dinars per day, according to Theophanes, and ſend every year 365 ſlaves and as many horſes to Conſtantinople. In this treaty, it was alſo ſtipulated, that the revenues of Cyprus, Armenia, and Heria, ſhould be equally divided between the caliph and the Greek emperor.

147 Muſab defeated and killed by Abdalmalec.

Abdalmalec being now at leiſure to purſue his intended expedition againſt Muſab, marched againſt him in perſon; and having arrived at Maſken, a ſmall town on the frontiers of Meſopotamia, where he was waited for by Muſab, the latter was defeated through the treachery of his troops, and himſelf killed. After the battle, Abdalmalec repaired to Cufa, where he was received with the utmoſt ſubmiſſion; and people of all ranks came in crowds to take the oath of allegiance to him. He then ordered vaſt ſums of money to be diſtributed among them, and gave a ſplendid entertainment to his new ſubjects, to which even the meaneſt of them were not refuſed admittance. During this entertainment, the unfortunate Muſab's head was preſented to the caliph; upon which one of the company took occaſion to ſay to him, "I ſaw Hoſein's head in this ſame caſtle preſented to Obeidallah; Obeidallah's to Al Mokhtar; Al Mokhtar's to Muſab; and now at laſt Muſab's to yourſelf." This obſervation ſo affected the caliph, that, either to avert the ill omen, or from ſome other motive, he ordered the caſtle to be immediately demoliſhed. Abdallah Ebn Zobeir, in the mean time, having received the melancholy news of the defeat and death of his brother, aſſembled the people of Mecca, and from the pulpit made a ſpeech ſuitable to the occaſion. He alſo did his utmoſt to put Mecca in a proper poſture of defence, expecting a ſpeedy viſit from his formidable competitor, who now gave law to Irak, Syria, and Egypt, without controul. Arabia.

Soon after Abdalmalec's return to Damaſcus, he appointed his brother Baſhar governor of Cufa, and Khaled Ebn Abdallah governor of Baſra. The latter had no ſooner entered upon his office, than he indiſcreetly removed from the command of the army Al Mohalleb, one of the greateſt generals of the age; appointing in his room Abdalaziz, who was greatly his inferior in military ſkill. Of this diſmiſſion the Azarakites being informed, they immediately attacked Abdalaziz, entirely defeated him, and took his wife priſoner. A diſpute ariſing among the victors about the price of that lady, one of them, to end it, immediately cut off her head. Upon this diſaſter, Khaled was commanded to replace Al Mehalleb, which he did; and having in conjunction with him attacked the Azarakites, forced their camp, and entirely defeated them.

148 Azarakites defeated.

In the 72d year of the Hegira, Abdalmalec having no enemy to contend with but Abdallah Ebn Zobeir, made great preparations for an invaſion of Hejaz, giving the command of the army to be employed on this occaſion to Al Hejaj, one of his moſt warlike and eloquent captains. Before that general had put his army in march for Mecca, he offered his protection to all the Arabs there that would accept of it. Abdallah being informed of the enemy's approach, ſent out ſeveral parties of horſe to reconnoitre, and give him intelligence of their motions. Between theſe and ſome of Al Hejaj's advanced guards ſeveral ſkirmiſhes happened, in which Abdallah's men had generally the worſt. This encouraged Al Hejaj to ſend to the caliph for a reinforcement, his troops amounting to no more than 2000 men, who were inſufficient for reducing Mecca. He aſſured him at the ſame time, that Abdallah's fierceneſs was very much abated, and that his men deſerted to him daily. The caliph, upon this, ordered a reinforcement of 5000 men under the command of Tharik Ebn Amer; but notwithſtanding this additional ſtrength, he made but little progreſs in the ſiege for ſome time. While he battered the temple of Mecca with his machines, it thundered and lightened ſo dreadfully, that the Syrians were ſtruck with terror, and refuſed to play them any longer upon that edifice. Upon this Al Hejaj ſtuck the corner of his veſt into his girdle, and putting into it one of the ſtones that was to

149 Mecca beſieged by Al Hejaj.

Arabia.

be diſcharged out of the catapults, ſlang it into the town, and this occaſioned the recommencement of the operations. The next morning the Syrians were annoyed by freſh ſtorms, which killed 12 men, and quite diſpirited them. Al Hejaj, however, animated them, by obſerving that he was a ſon of Tehama; that this was the ſtorm of Tehama, and that their adverſaries ſuffered as much as they. The day following ſome of Abdallah's men were killed by a very violent ſtorm, which gave Al Hejaj a further opportunity of animating his troops. At laſt, Abdallah having been deſerted by moſt of his friends, 10,000 of the inhabitants of Mecca, and even by his own ſons Hamza and Khobeib, deſired to know his mother's ſentiments as to what courſe he was to take. He repreſented to her, that he was almoſt entirely abandoned by his ſubjects and relations; that the few who perſiſted in their fidelity to him could ſcarce enable him to defend the city any longer; and that the Syrian caliph would grant him any terms he could think fit to demand. His mother, however, being of an inflexible reſolution, and not able to bear the thoughts of ſeeing her ſon reduced to the rank of a private perſon, being herſelf the daughter of Abu Becr, the firſt caliph, adviſed him by no means to ſurvive the ſovereignty, of which he was on the point of being deprived. This advice being agreeable to his own ſentiments, he reſolved to die in defence of the place. In purſuance of this reſolution, he defended the city, to the amazement of the beſiegers, for ten days, though deſtitute of arms, troops, and fortifications. At laſt, having taken a final leave of his mother, and being animated by deſpair, he made a ſally upon the enemy, deſtroyed a great number of them with his own hand, and was at length killed fighting valiantly upon the ſpot. At the laſt interview he had with his mother, ſhe is ſaid to have deſired him to put off a coat of mail he had on for his defence; and, in order to inſpire him with the greater fortitude, ſhe gave him a draught in which a whole pound of muſk had been infuſed. Al Hejaj ordered his head to be cut off, and his body to be affixed to a croſs; and by reaſon of the muſk he had drank, the body emitted a grateful odour for ſeveral days.

150 Abdallah killed.

By the reduction of Mecca, and the death of Abdallah Ebn Zobeir, Abdalmalec remained ſole maſter of the Moſlem empire; but he ſuſtained a great loſs next year, in having an army of 100,000 men totally cut off by the Khazarians in Armenia. The governor, however, having marched in perſon againſt them at the head of only 40,000 men, but all choſen troops, penetrated into the heart of Armenia, defeated and diſperſed a large body of the Khazarians, drove them into their temples, and reduced them to aſhes. One of his generals alſo defeated an army of 80,000 Khazarians at the Iron or Caſpian Gates, and deſtroyed a great number of them, obliging the reſt to embrace the Mahometan religion.

151 Khazarians reduced.

152 Cruelty of Al Hejaj.

Al Hejaj, in conſequence of his ſervices, was made governor, firſt of Medina, and then of Irak, Khoraſan, and Sijiſtan; in all which places he behaved with the greateſt cruelty. Having entered the city of Cufa muffled up in his turban, he was ſurrounded by crowds of people who preſſed forward to ſee him. He told them their curioſity would ſoon be gratified; which he effectually did, by aſcending the pulpit, and treating them in a very coarſe manner; ſwearing that he would make the wicked bear his own burden, and fit him with his own ſhoe; and telling them, among other things, that "he imagined he ſaw the *heads* of men ripe and ready to be gathered, and turbans and beards beſprinkled with blood." At Baſra he made a ſpeech much to the ſame purpoſe; and, to give the inhabitants a taſte of his diſcipline, cauſed one of them who had been informed againſt as a rebel to be beheaded on the ſpot without any trial. So great indeed was the abhorrence in which he was held by thoſe over whom he preſided, that having once recommended himſelf to the prayers of a religious Moſlem, the latter inſtantly prayed that it would pleaſe God to kill Al Hejaj quickly; "for nothing, ſaid he, could be more advantageous for himſelf or the people." In conſequence of theſe cruelties, rebellions were ſoon raiſed againſt him; but they were eaſily ſuppreſſed, and Al Hejaj continued in the full enjoyment of all his employments till he died.

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153 Saleh and Shebib rebel.

In the 76th year of the Hegira, one Saleh Ebn Marj, a hot-headed enthuſiaſt, and Shebib Ebn Zeid, a Kharejite, took up arms againſt the caliph. They had conſpired againſt him the year before when on a pilgrimage to Mecca; and Al Hejaj had been ordered to ſeize them: but at that time they found means to make their eſcape; and having now aſſembled about 120 men, Saleh was proclaimed emperor of the faithful at Daras in Meſopotamia. The governor ſoon received intelligence of their motions; and ordered a body of 500 men, under the command of one Adi, to march againſt them: but that general, being afraid to attack them notwithſtanding his ſuperiority in numbers, demanded a reinforcement. He therefore was ſupplied with 500 more troops, with which he advanced to Daras; but being ſtill afraid of the rebels, he entered into negociations with them; during which they attacked him, entirely defeated his army, and made themſelves maſters of his camp. Upon this the governor ſent a detachment of 1500 horſe againſt them; but the rebels, notwithſtanding the ſmallneſs of their number, defended themſelves in ſuch a manner, that the caliph's troops were forced to diſmount and fight on foot. The engagement continued till night; when the rebels, finding themſelves unable to contend with ſuch numbers, retired to Mawſel. After this, Al Hejaj being informed that they had taken poſt at Daſcara, ſent againſt them an army of 5000 men. The rebels, hearing of this formidable army, abandoned their camp; but were ſo cloſely purſued, that they found themſelves obliged to ſtand an engagement at Modbaj, a ſmall village on the Tigris. Saleh's forces, conſiſting only of three companies of 30 men each, was ſoon thrown into diſorder, and himſelf killed: but Shebib made an excellent retreat to a neighbouring caſtle; from whence he ſallied out at midnight on the caliph's forces, penetrated to the very heart of the camp, where he wounded the general himſelf, and diſperſed the greateſt part of his army.

154 Their bravery.

155 Saleh killed.

After this victory, the rebels became terrible even to Al Hejaj himſelf, whom they afterwards defeated in ſeveral engagements; and taking advantage of his being at Baſra, made themſelves maſters of Cufa with little oppoſition. Al Hejaj was now conſtrained to

156 Al Hejaj defeated by Shebib.

write

Arabia.

write to the caliph for a ſtrong detachment of the Syrian troops, with which he advanced againſt Shebib; whoſe army bearing no proportion to that of Al Hejaj, the former was totally defeated, had his wife's brother killed in the action, and was obliged to fly into Kerman. Having refreſhed his men in this province, he again advanced to Ahwaz, where he was met by one of Al Hejaj's generals at the head of the Syrian army. Shebib defended himſelf with incredible valour, and ſeveral times repulſed the caliph's forces; but being overpowered by numbers, as his army conſiſted of no more than 600 men, he was at laſt put to flight, and, in paſſing a bridge, was thrown off by his horſe and drowned. His body was drawn up by a net, and the head ſent to Al Hejaj, who was not a little pleaſed at the ſight. After his death, the rebels quarrelled among themſelves, ſo that the caliph's troops cut off the greateſt part of them. The remainder, under Katri Ebn Fojat, fled to Tabreſtan. Here they were kindly received by Aſhid the king, who aſſigned them a part of his territories for their habitation. But they had not been long ſettled before they inſiſted upon Aſhid's either embracing Mahometaniſm, or paying them an annual tribute; which he refuſing, they drove him into Irak, where he implored the caliph's protection. Aſhid afterwards conducted a body of Moſlem troops into Tabreſtan; where they fell upon the rebels with ſuch fury, that they killed Katri himſelf, cut a great number of his men to pieces, and took all the reſt priſoners.

157 Shebib's valour and death.

158 Ingratitude of the rebels.

159 They are all deſtroyed.

This year alſo (the 76th of the Hegira) money was firſt coined in Arabia. Before this time, the dinars, or gold coins, had Greek inſcriptions; and the dirhems, or ſilver ones, Perſic inſcriptions. The firſt erection of a mint in Arabia was occaſioned by the following accident. Abdalmalec added to the letters he wrote to the Greek emperor this ſhort paſſage of the Koran, "Say, God is one;" or "Say, there is one God;" and then inſerted the year of the Hegira, with the name of the prophet, in ſuch a manner as gave the emperor great offence. Upon this he wrote to Abdalmalec, deſiring him to alter that manner of writing, or he would ſend him ſome coins in which the name of Mahomet ſhould be mentioned in ſuch a manner as would not prove very agreeable. Abdalmalec now reſolved to coin money of his own; and accordingly ſome dirhems were this year ſtamped by Al Hejaj, with the inſcription *Alla Samad*, "God is eternal;" which gave great offence to the ſuperſtitious Moſlems, as they imagined that the name of God would be thereby profaned by the touch of unclean perſons.

160 Money firſt coined in Arabia.

In the 77th year of the Hegira, the Arabs made an incurſion into the imperial territories, and had Lazica and Bernucium betrayed to them; and the next year they made themſelves maſters of Africa Propria, demoliſhing the city of Carthage ſo effectually, that ſcarce a veſtige of it was left. They were ſoon driven out, however, by John the Patrician, a man of great valour and experience in war; but returning with a ſuperior force, they obliged John in his turn to fly to Conſtantinople.

161 Carthage demoliſhed.

The 79th year of the Hegira is remarkable for nothing but the rebellion of Abdalrahman in Perſia; who drove the khan, or emperor of the Turks, Tartars, or Moguls, out of that country: but the following year, one of the Greek generals, named *Heraclius*, penetrated into Syria as far as Simoſata, and deſtroyed 200,000 Arabs, ravaging the country in a terrible manner; and Abdalrahman was defeated and killed by Al Hejaj, after a great number of engagements, ſome ſay 81, and others 100. In the 83d year of the Hegira, the nobility of Armenia revolting, drove the Arabs out of that province; but Mahomet, one of the caliph's generals, entering the country with a powerful army, got the authors of the revolt into his hands, and cauſed them all to be burnt alive. Encouraged by this ſucceſs, the Moſlems invaded Cilicia under one Azar; but were, to the number of 10,000, cut in pieces by Heraclius; and the next year, having again entered that country, 12,000 of them were deſtroyed by the ſame general, and the reſt forced to fly into their own country.

Arabians defeated by Heraclius.

In the 86th year of the Hegira died the caliph Abdalmalec, after a reign of 21 years. He is ſaid to have had ſuch a ſtinking breath, that the flies which accidentally ſettled on his lips were almoſt inſtantly ſtruck dead by it. He was ſucceeded by Al Walid, who greatly extended the Moſlem dominions. The firſt year of his reign, one of his generals having paſſed the Oxus (now the Jihun), defeated a numerous army of Turks and Tartars. He then overran and entirely reduced the countries of Sogd or Sogdiana, Bagrafs, Shaſh, Targana, and the whole immenſe tract going under the name of Mawaralnahr, or Great Bukharia. He alſo conquered the khan of Khowarazm, obliging him to pay an annual tribute of two millions of dinars. About the ſame time another general, called *Mahomet*, made an irruption into India, and ſubdued a conſiderable part of that country. He alſo entirely ſubdued the kingdom of Al Sind, lying between Perſia and India. In this expedition, Derar king of Al Sind was defeated and killed, and had his head cut off by Mahomet.

164 Abdalmalec dies.

164 Prodigious conqueſts of the Moſlems.

In the 90th year of the Hegira, the Moſlems made an irruption into Cappadocia, defeated the emperor's army who oppoſed them, and took the city of Tyana. The next year they made another incurſion into the imperial territories, whence they carried off numbers of ſlaves; and the year following one Othman penetrated into the heart of Cilicia, where he made himſelf maſter of ſeveral cities, but does not appear to have long kept his conqueſts.

In the 93d year of the Hegira, anſwering to that of Chriſt 712, Tarik Ebn Zarka made a deſcent on Spain, defeated Roderic the laſt king of the Goths, reduced the city of Toledo, and overran a conſiderable part of the kingdom. Being afterwards joined by Muſa, commander of the African Moſlems, the two generals made themſelves maſters of moſt of the fortreſſes, ſubjugating in a manner the whole country, and obliging it to pay tribute to the caliph. In theſe expeditions the Moſlems acquired ſpoils of immenſe value; and, amongſt other things, an exceeding rich table, called by the Arab writers "the table of Solomon the ſon of David." According to theſe writers, this table conſiſted entirely of gold and ſilver, and was adorned with three borders of pearls; but Roderic of Toledo, a Spaniſh hiſtorian, ſays it conſiſted of one entire ſtone, of a green colour, and of an immenſe ſize, having no leſs than 365 feet. He adds, that it was found

165 They make a deſcent on Spain,

166 and overran the whole country.

Arabia. found in a certain village or town, near the mountain called in his days *Jibal Soliman*, or "the mountain of Solomon."

After Muſa and Tarik had committed dreadful depredations in Spain, they were both recalled by the caliph; but the next year, Tarik having undertaken another expedition into the ſame country, landed a body of 12,000 men at Gibraltar, with which he plundered the whole province of Bætica, and overran the greateſt part of Luſitania. Roderic hearing of theſe depredations, ſent againſt him an army of raw undiſciplined troops, who were eaſily defeated, and moſt of them left dead on the ſpot; which ſo animated the Arab commander, that he reſolved not to lay down his arms till he had made an abſolute conqueſt of Spain. About the ſame time that Tarik made ſuch progreſs in Spain, another Moſlem general entered Piſidia with a powerful army, took the city of Antioch, and, after having ravaged the country, retired into the caliph's territories with very little loſs.

167 Al Hejaj dies. In the 95th year of the Hegira died Al Hejaj governor of Irak, &c. after he had preſided over that country 20 years. He exerciſed ſuch cruelties upon thoſe who were in ſubjection to him, that he is ſaid to have killed 120,000 men, and to have ſuffered 50,000 men and 30,000 women to periſh in priſon. To excuſe this cruelty, he uſed frequently to ſay, That a ſevere, or even violent government, is better than one too weak and indulgent; as the firſt only hurts particular perſons, but the latter the whole community. This year alſo the Arabs gained a complete victory in Spain over Roderic king of the Goths, who periſhed in the action. In this campaign, Tarik poſſeſſed himſelf of immenſe treaſures; by which means he was enabled to reward not only his officers, but common ſoldiers alſo. In the eaſtern parts of the world alſo, the Arabs were this year very formidable; Moſlema, an Arab general, having entered the imperial territories, ravaged the whole province of Galatia, carrying off with him many rich ſpoils, and a vaſt number of priſoners. The Greek emperor, hearing that Al Walid deſigned to attack him both by ſea and land, ſent ſome of his nobles to treat of a peace; and, among other things, deſired them to bring him a particular account of the force with which the caliph deſigned to invade the Greek empire. This they repreſented as ſo terrible; that it would be next to impoſſible to oppoſe it. The emperor therefore cauſed a great number of light ſhips to be built, the walls to be repaired, and ordered ſuch of the citizens as had not laid up proviſions for three years to depart the city. Al Walid, in the mean time, continued his warlike preparations with the utmoſt vigour, being determined to make himſelf maſter of Conſtantinople in a ſingle campaign.

168 Al Walid dies, and is ſucceeded by Soliman. In the 96th year of the Hegira died the caliph Al-Walid; and was ſucceeded by his brother Soliman. This year the Moſlem conqueſts on the eaſt ſide were increaſed by the reduction of Tabreſtan and Jurgan or Georgia. In Spain, alſo, the city of Toledo which had revolted was reduced, and Cæſarea Auguſta, now Saragoſſa, as well as ſeveral others. The next year Moſlema ſet out for Conſtantinople, which he beſieged without ſucceſs till the 99th year of the Hegira; at which time he was obliged to return, after having loſt before it 120,000 men. The ſoldiers were reduced to

169 Conſtantinople unſuccefsfully beſieged.

the greateſt extremities of hunger, being forced to live upon hides, the roots and bark of trees, the moſt noiſome animals, and even the dead bodies of their companions. This year alſo (the 99th of the Hegira) is remarkable for the death of the caliph Soliman. According to ſome, he was poiſoned by Yezid his brother, governor of Perſia, who was diſpleaſed with his having appointed his couſin-german, Omar Ebn Abdalaziz, as his ſucceſſor, to the excluſion of himſelf. According to others, he died of an indigeſtion; which is not greatly to be wondered at, if, as thoſe authors ſay, he uſed to devour 100 pounds weight of meat every day, and dine very heartily after eating three lambs roaſted for breakfaſt. In the latter part of his reign, the Moſlems were by no means ſucceſsful in Spain: the kingdom of Navarre being founded at this time by Pelagius, or Pelayo, whom the Arabs were never able to reduce. Arabia.

170 Death of Soliman.

The new caliph Omar Ebn Abdalaziz was by no means of a martial character; but is ſaid to have been very pious, and poſſeſſed of very amiable qualities. He ſuppreſſed the uſual malediction, which was ſolemnly pronounced by the caliphs of the houſe of Ommiyah againſt the houſe of Ali; and always ſhowed great kindneſs to the latter. He was poiſoned by Yezid, after a ſhort reign of two years and five months. It is related, as an inſtance of this caliph's humility, that when Moſlema viſited him in his laſt ſickneſs occaſioned by the poiſon, he lay upon a bed of palm tree leaves, ſupported by a pillow formed of beaſts ſkins, and covered with an ordinary garment. He had alſo on a dirty ſhirt; for which Moſlema blamed his ſiſter Fatima, Omar's wife; but ſhe excuſed herſelf by telling him, that the emperor of the faithful had not another ſhirt to put on.

171 New caliph poiſoned.

Concerning Yezid the ſucceſſor of Oman we find very little worth mentioning. He did not long enjoy the dignity he had ſo iniquitouſly purchaſed, dying after a reign of little more than four years. He died of grief for a favourite concubine named *Hababah*, who was accidentally choked by a large grape which ſtuck in her throat.

Yezid was ſucceeded by his brother Heſham, who aſcended the throne in the 105th year of the Hegira. In the ſecond and third year of his reign, ſeveral incurſions were made into the imperial territories, but generally without ſucceſs. In the 109th year of the Hegira, Moſlema drove the Turks out of Armenia and Aderbijan, and again confined them within the Caſpian Gates. The next year he obliged them to take an oath that they ſhould keep their own country; but this they ſoon violated, and were again driven back by Moſlem. About this time alſo the Arabs, having paſſed the Pyrenees, invaded France to the number of 400,000, including women and ſlaves, under the command of one Abdalrahman. Having advanced to Arles upon the Rhone, they defeated a large body of French that oppoſed them; and having alſo defeated Count Eudo, they purſued him through ſeveral provinces, waſted the whole country with fire and ſword, making themſelves maſters of the city of Tours, moſt of which they reduced to aſhes. Here, however, a ſtop was put to their devaſtations by Charles Martel; who, coming up with them near the above-mentioned city, engaged them for ſeven days together, and at laſt gave them a total overthrow.

172 The Turks defeated.

173 France invaded by the Arabs.

174 They are utterly defeated by Charles Martel.

Arabia. overthrow. The French general made himſelf maſter of all their baggage and riches; and Abdalrahman, with the ſhattered remains of his army, reached the frontiers of Spain with the utmoſt difficulty. The following year alſo, according to ſome hiſtorians, the Arabs were overthrown at Illiberis, ſcarce any of them making their eſcape. To make amends for this bad fortune, however, the caliph's arms were ſucceſsful againſt the Turks, who had again invaded ſome of the eaſtern provinces.

In the 125th year of the Hegira died the caliph Heſham, after a reign of 19 years, ſeven months, and eleven days. He was ſucceeded by Al Walid II. who is repreſented as a man of a moſt diſſolute life, and was aſſaſſinated the following year on account of his profeſſing *Zendiciſm*, a ſpecies of infidelity nearly reſembling Sadduciſm. He was ſucceeded by Yezid the ſon of Al Walid I. who died of the plague, after a reign of ſix months; and was ſucceeded by Ibrahim Ebn Al
175 Reign of Merwan. Walid, an imprudent and ſtupid prince. He was depoſed in the 127th year of the Hegira by Merwan Ebn Mahomet, the governor of Meſopotamia; who gave out, as an excuſe for his revolt, that he intended to revenge the murder of the caliph Al Walid II. He was no ſooner ſeated on the throne, than the people of Hems rebelled againſt him. Againſt them the caliph marched with a powerful army; and aſking them what could excite them to this rebellion, ſummoned them to ſurrender. They aſſured him that they were diſpoſed to admit him into their city; and, accordingly, one of the gates being opened, Merwan entered with about 300 of his troops. The men that entered with him were immediately put to the ſword; and the caliph himſelf eſcaped with great difficulty. However, he afterwards defeated them in a pitched battle, put a great number of them to the ſword, diſmantled the city, and crucified 600 of the principal authors of the revolt.

This, however, was far from quieting the commotions in different parts of the empire. The inhabitants of Damaſcus ſoon followed the example of thoſe of Hems, and depoſed the caliph's governor; but Merwan, immediately after the extinction of the former rebellion, marched to Damaſcus with great celerity, entered the city by force, and brought to condign puniſhment the authors of the revolt. Peace, however, was no ſooner eſtabliſhed at Damaſcus, than Soliman Ebn Heſham ſet up for himſelf at Baſra, where he was proclaimed caliph by the inhabitants. Here he aſſembled an army of 10,000 men, with whom he marched to Kinniſſin, where he was joined by vaſt numbers of Syrians, who flocked to him from all parts. Merwan, receiving advice of Soliman's rapid progreſs, marched againſt him with all the forces he could aſſemble, and entirely defeated him. In this engagement Soliman loſt 30,000 men; ſo that he was obliged to fly to Hems, where 900 men took an oath to ſtand by him to the laſt. Having ventured, however, to attack the caliph's forces a ſecond time, he was defeated, and again forced to fly to Hems. But, being cloſely purſued by Merwan, he conſtituted his brother Said governor of the city, leaving with him the ſhattered remains of his troops, and himſelf fled to Tadmor. Soon after his departure Merwan appeared before the town, which he beſieged for ſeven months; during which time he battered it inceſſantly with 80 catapults. The citizens, Arabs. being reduced to the laſt extremity, ſurrendered and delivered Said into the caliph's hands. In conſideration of this ſubmiſſion, Merwan pardoned the rebels, and took them all under his protection. About the ſame time, another pretender to the caliphate appeared at Cufa; but Merwan took his meaſures ſo well, that he extinguiſhed this rebellion before it could come to any height.

176 A party formed a gainſt him in Khoraſan.

Notwithſtanding the ſucceſs, however, that had hitherto attended Merwan, a ſtrong party was formed againſt him in Khoraſan by the houſe of Al Abbas. The firſt of that houſe that made any conſiderable figure was named *Mahomet*, who flouriſhed in the reign of Omar Ebn Abdalaziz. He was appointed chief of the houſe of Al Abbas about the hundredth year of the Hegira; and is ſaid to have propheſied, that after his death, one of his ſons, named *Ibrahim*, ſhould preſide over them till he was killed, and that his other ſon Abdallah, ſurnamed *Abul Abbas Al Saffah*, ſhould be caliph, and exterminate the houſe of Ommiyah. Upon this Al Saffah was introduced as the future ſovereign, and thoſe preſent kiſſed his hands and feet.

After the deceaſe of Mahomet, his ſon Ibrahim nominated as his repreſentative in Khoraſan one Abu Moſlem, a youth of 19 years of age; who beginning to raiſe forces in that province, Merwan deſpatched againſt him a body of horſe under the command of Naſr
177 Merwan's forces defeated. Ebn Sayer; but that general was entirely defeated by Abu Moſlem, and the greateſt part of his men killed. The next year (the 128th of the Hegira) Merwan made vaſt preparations to oppoſe Abu Moſlem, who after the late victory began to grow formidable to ſeveral parts of the empire. According to ſome authors, Merwan gained two victories over ſome of Ibrahim's generals; but the year following, Abu Moſlem brought ſuch a formidable army into the field, that the caliph's troops could not make head againſt them; his officers in Khoraſan therefore were obliged either to take an oath of allegiance to Ibrahim, or to quit the province within a limited time.

In the 130th year of the Hegira, the caliph's general Naſr having drawn together another army, was again defeated by Khataba another of Ibrahim's generals, and forced to fly to Raya, a town of Dylam, according to ſome, or of Khoraſan, according to others.
178 Ibrahim put to death. The next year Ibrahim having fooliſhly taken it into his head to go on a pilgrimage to Mecca, attended by a numerous retinue ſplendidly accoutred, was ſeized and put to death by Merwan; and the year following Abu Abbas was proclaimed caliph at Cufa. As ſoon as the ceremony was ended, he ſent his uncle Abdallah with a powerful army to attack Merwan's forces that were encamped near Tubar at a ſmall diſtance from Moſul, where that caliph was then waiting for an account of the ſucceſs of his troops under Yezid governor of Irak, againſt Khataba one of Al Saffah's generals. Khataba receiving advice of Yezid's approach, immediately advanced againſt him, and entirely defeated him; but in croſſing the Euphrates, the waters of which were greatly ſwelled, he was carried away by the current and drowned. The purſuit, however, was continued by his ſon Hamid, who diſperſed the fugitives in ſuch a manner that they could never afterwards be rallied. At the news of this diſaſter, Merwan was

Arabia.

at firſt greatly diſpirited; but ſoon recovering himſelf, he advanced to meet Abdallah. In the beginning of the battle, the caliph happened to diſmount; and his troops perceiving their ſovereign's horſe without his rider, concluded that he was killed, and therefore immediately fled; nor was it in the power of the caliph himſelf to rally them again, ſo that he was forced to fly to Damaſcus: but the inhabitants of that city, ſeeing his condition deſperate, ſhut their gates againſt him. Upon this he fled to Egypt, where he maintained himſelf for ſome time; but was at laſt attacked and killed by Saleh, Abdallah's brother, in a town of Thebais, called *Buſir Kurides*. The citizens of Damaſcus, though they had ſhamefully deſerted Merwan, refuſed to open their gates to the victors; upon which Saleh entered the city by force, and gave it up to be plundered for three days by his ſoldiers.

170 Merwan himſelf defeated,

180 and killed.

By the total defeat and death of Merwan, Al Saffah remained ſole maſter of the Moſlem throne; but we hear of no very remarkable events that happened during his reign: only that he maſſacred great numbers of the partiſans of the houſe of Ommiyah; and that Conſtantine Copronymus, taking advantage of the inteſtine diviſions among the Moſlems, ravaged Syria. The caliph died of the ſmallpox in the 136th year of the Hegira, in the 33d year of his age; and was ſucceeded by his brother Al Manſur. In the beginning of Al Manſur's reign, hoſtilities continued againſt the houſe of Ommiyah, who ſtill made reſiſtance, but were always defeated. Abdallah, however, the caliph's uncle, cauſed himſelf to be proclaimed caliph at Damaſcus; and having aſſembled a powerful army in Arabia, Syria, and Meſopotamia, advanced with great expedition to the banks of the Maſius near Niſibis, where he encamped. Al Manſur, being informed of this rebellion, deſpatched Abu Moſlem againſt Abdallah. This general, having haraſſed him for five months together, at laſt brought him to a general action; and having entirely defeated him, forced him to fly to Baſra. Notwithſtanding all his ſervices, however, Abu Moſlem was ſoon after ungratefully and barbarouſly murdered by Al Manſur, on ſome ridiculous pretences of being deficient in reſpect towards him.

181 Reign of Al Manſur.

182 He murders Abu Moſlem.

After the death of Abu Moſlem, one Sinan a Magian, or adorer of fire, having made himſelf maſter of that general's treaſures, revolted againſt the caliph; but he was ſoon defeated by Jamhur Ebn Morad, who had been ſent againſt him with a powerful army. In this expedition Jamhur having acquired immenſe riches, the covetous diſpoſition of the caliph prompted him to ſend a perſon expreſs to the army to ſeize upon all the wealth. This ſo provoked Jamhur, that he immediately turned his arms againſt his maſter; but was ſoon defeated, and entirely reduced. The following year (the 139th of the Hegira, one Abdalrahman, of the houſe of Ommiyah, after the entire ruin of that family in Aſia, arrived in Spain, where he was acknowledged caliph; nor did he or his deſcendants ever afterwards own ſubjection to the Arabian caliphs.

183 Abdalrahman proclaimed caliph in Spain.

184 Attempt to aſſaſſinate the caliph.

The 140th year of the Hegira is remarkable for an attempt to aſſaſſinate the caliph. This attempt was made by the Rawandians; an impious ſect, who held the doctrine of metempſychoſis or tranſmigration.—They firſt offered Al Manſur divine honours, by going in proceſſion round his palace, as the Moſlems were wont to do round the Caaba; but the caliph, highly incenſed at this impiety, ordered 100 of the principal of them to be impriſoned. Theſe, however, were ſoon releaſed by their companions; who then went in a body to the palace with an intention to murder their ſovereign: but he being a perſon of uncommon bravery, though he was ſurpriſed with very few attendants, mounted a mule, and advanced towards the mutineers, with an intention to ſell his life as dear as poſſible. In the mean time, Maan Ebn Zaidat, one of the chiefs of the Ommiyan faction, who had concealed himſelf in order to avoid the caliph's reſentment, ſallied out of his retreat, and putting himſelf at the head of Al Manſur's attendants, charged the rebels with ſuch fury, that he entirely defeated them. This generoſity of Maan was ſo remarkable, that it afterwards paſſed into a proverb. On this occaſion 6000 of the Rawandians were killed on the ſpot, and the caliph delivered from inſtant death: he was, however, ſo much diſguſted with the Arabs on account of this attempt, that he reſolved to remove the capital of his empire out of their peninſula; and accordingly founded a new city on the banks of the Tigris, which from that time to this has been known by the name of *Bagdad*. The foundations of it were laid in the 145th year of the Hegira, and finiſhed four years after.

185 He removes the ſeat of empire to Bagdad.

On the removal of the ſeat of government to Bagdad, the peninſula of the Arabs ſeems all at once to have loſt its conſequence, and in a ſhort time the inhabitants ſeem even to have detached themſelves from the juriſdiction of the caliphs: for in the 156th year of the Hegira, while Al Manſur was yet living, they made irruptions into Syria and Meſopotamia, as if they had deſigned to conquer theſe countries over again for themſelves; and though the Arabs, properly ſo called, continued nominally ſubject to the caliphs of Bagdad till the abolition of the caliphate by Hulaku the Tartar, yet they did not become ſubject to him when he became maſter of that city. There is even the ſtrongeſt reaſon to believe that the Arabs (i. e. the inhabitants of the peninſula properly called *Arabia*) have remained independent, not only of Hulaku, but of every other conqueror that the world hath yet produced.

The perpetual independence of the Arabs, indeed, "has been the theme of praiſe among ſtrangers and natives. The kingdom of Yemen, it is true, has been ſucceſſively ſubdued by the Abyſſinians, the Perſians, the ſultans of Egypt, and the Turks; the holy cities of Mecca and Medina have repeatedly bowed under a Scythian tyrant; and the Roman province of Arabia embraced the peculiar wilderneſs in which Iſmael and his ſons muſt have pitched their tents in the face of their brethren. Yet theſe exceptions are temporary or local; the body of the nation has eſcaped the yoke of the moſt powerful monarchies: the arms of Seſoſtris and Cyrus, of Pompey and Trajan, could never achieve the conqueſt of Arabia; the preſent ſovereign of the Turks may exerciſe a ſhadow of juriſdiction, but his pride is reduced to ſolicit the friendſhip of a people whom it is dangerous to provoke and fruitleſs to attack. The obvious cauſes of their freedom are inſcribed on the character and country of the Arabs. Many ages before Mahomet, their intrepid valour had been ſeverely felt by their neighbours in offenſive and defenſive war. The patient and active virtues of a ſoldier

Gibbon's Hiſt. vol. v. p. 178.

186 National independence of the Arabs.

Arabia.

dier are insensibly nursed in the habits and discipline of a pastoral life. The care of the sheep and camels is abandoned to the women of the tribe; but the martial youth, under the banner of the emir, is ever on horseback, and in the field, to practise the exercise of the bow, the javelin, and the scimitar. The long memory of their independence is the firmest pledge of its perpetuity; and succeeding generations are animated to prove their descent and to maintain their inheritance. Their domestic feuds are suspended on the approach of a common enemy; and in their last hostilities against the Turks, the caravan of Mecca was attacked and pillaged by fourscore thousand of the confederates. When they advance to battle, the hope of victory is in the front; and in the rear, the assurance of a retreat. Their horses and camels, who in eight or ten days can perform a march of four or five hundred miles, disappear before the conqueror; the secret waters of the desert elude his search; and his victorious troops are consumed with thirst, hunger, and fatigue, in the pursuit of an invisible foe, who scorns his efforts, and safely reposes in the heart of the burning solitude. The arms and deserts of the Bedoweens are not only the safeguards of their own freedom, but the barriers also of the Happy Arabia, whose inhabitants, remote from war, are enervated by the luxury of the soil and climate. The legions of Augustus melted away in disease and lassitude; and it is only by a naval power that the reduction of Yemen has been successfully attempted. When Mahomet erected his holy standard, that kingdom was a province of the Persian empire; yet seven princes of the Homerites still reigned in the mountains; and the vicegerent of Chosroes was tempted to forget his distant country and his unfortunate master. The historians of the age of Justinian represent the state of the independent Arabs, who were divided by interest or affection in the long quarrel of the East: the tribe of Ghassan was allowed to encamp on the Syrian territory; the princes of Hira were permitted to form a city about 40 miles to the southward of the ruins of Babylon. Their service in the field was speedy and vigorous; but their friendship was venal, their faith inconstant, their enmity capricious: it was an easier task to excite than to disarm these roving barbarians: and, in the familiar intercourse of war, they learned to see, and to despise, the splendid weakness both of Rome and of Persia. From Mecca to the Euphrates, the Arabian tribes were confounded by the Greeks and Latins, under the general appellation of Saracens; a name which every Christian mouth has been taught to pronounce with terror and abhorrence.

187 Their domestic freedom and character.

"The slaves of domestic tyranny may vainly exult in their national independence; but the Arab is personally free; and he enjoys, in some degree, the benefits of society, without forfeiting the prerogatives of nature. In every tribe, superstition, or gratitude, or fortune, has exalted a particular family above the heads of their equals. The dignities of sheich and emir invariably descend in this chosen race; but the order of succession is loose and precarious; and the most worthy or aged of the noble kinsmen are preferred to the simple, though important, office of composing disputes by their advice, and guiding valour by their example. The momentary junction of several tribes produces an army: their more lasting union constitutes a nation; and the supreme chief, the emir of emirs, whose banner is displayed at their head, may deserve, in the eyes of strangers, the honours of the kingly name. If the Arabian princes abuse their power, they are quickly punished by the desertion of their subjects, who had been accustomed to a mild and parental jurisdiction. Their spirit is free, their steps are unconfined, the desert is open, and the tribes and families are held together by a mutual and voluntary compact. The loftier natives of Yemen supported the pomp and majesty of a monarch; but if he could not leave his palace without endangering his life, the active powers of government must have been devolved on his nobles and magistrates. The cities of Mecca and Medina present, in the heart of Asia, the form or rather the substance of a commonwealth. The grandfather of Mahomet, and his lineal ancestors, appear in foreign and domestic transactions as the princes of their country; but they reigned like Pericles at Athens, or the Medici at Florence, by the opinion of their wisdom and integrity: their influence was divided with their patrimony; and the sceptre was transferred from the uncles of the prophet to a younger branch of the tribe of Koreish. On solemn occasions they convened the assembly of the people; and, since mankind must be either compelled or persuaded to obey, the use and reputation of oratory among the ancient Arabs is the clearest evidence of public freedom. But their simple freedom was of a very different cast from the nice and artificial machinery of the Greek and Roman republics, in which each member possessed an undivided share of the civil and political rights of the community. In the more simple state of the Arabs, the nation is free, because each of her sons disdains a base submission to the will of a master. His breast is fortified with the austere virtues of courage, patience, and sobriety; the love of independence prompts him to exercise the habits of self-command; and the fear of dishonour guards him from the meaner apprehension of pain, of danger, and of death. The gravity and firmness of the mind is conspicuous in its outward demeanour: his speech is slow, weighty, and concise; he is seldom provoked to laughter; his only gesture is that of stroaking his beard, the venerable symbol of manhood; and the sense of his own importance teaches him to accost his equals without levity, and his superiors without awe. The liberty of the Saracens survived their conquests: the first caliphs indulged the bold and familiar language of their subjects: they ascended the pulpit to persuade and edify the congregation; nor was it before the seat of empire was removed to the Tigris, that the Abbassides adopted the proud and pompous ceremonial of the Persian and Byzantine courts.

188 Civil wars and private revenge.

"In the study of nations and men, we may observe the causes that render them hostile or friendly to each other, that tend to narrow or enlarge, to mollify or exasperate, the social character. The separation of the Arabs from the rest of mankind has accustomed them to confound the ideas of stranger and enemy; and the poverty of the land has introduced a maxim of jurisprudence, which they believe and practise to the present hour. They pretend, that in the division of the earth the rich and fertile climates were assigned to the other branches of the human family; and that

Arabia. the posterity of the outlaw Ismael might recover, by fraud or force, the portion of inheritance of which he had been unjustly deprived. According to the remark of Pliny, the Arabian tribes are equally addicted to theft and merchandise: the caravans that traverse the desert are ransomed or pillaged; and their neighbours, since the remote times of Job and Sesostris, have been the victims of their rapacious spirit. If a Bedoween discovers from afar a solitary traveller, he rides furiously against him, crying, with a loud voice, "Undress thyself; thy aunt, (*my wife*) is without a garment." A ready submission entitles him to mercy; resistance will provoke the aggressor, and his own blood must expiate the blood which he presumes to shed in legitimate defence. A single robber, or a few associates, are branded with their genuine name; but the exploits of a numerous band assume the character of lawful and honourable war. The temper of a people, thus armed against mankind, was doubly inflamed by the domestic license of rapine, murder, and revenge. In the constitution of Europe, the right of peace and war is now confined to a small, and the actual exercise to a much smaller, list of respectable potentates; but each Arab, with impunity and renown, might point his javelin against the life of his countryman. The union of the nation consisted only in a vague resemblance of language and manners; and in each community the jurisdiction of the magistrate was mute and impotent. Of the time of ignorance which preceded Mahomet, 1700 battles are recorded by tradition: hostility was embittered with the rancour of civil faction; and the recital, in prose or verse, of an obsolete feud was sufficient to rekindle the same passions among the descendants of the hostile tribes. In private life, every man, at least every family, was the judge and avenger of its own cause. The nice sensibility of honour, which weighs the insult rather than the injury, sheds its deadly venom on the quarrels of the Arabs: the honour of their women, and of their *beards*, is most easily wounded; an indecent action, a contemptuous word, can be expiated only by the blood of the offender; and such is their patient inveteracy, that they expect whole months and years the opportunity of revenge. A fine or compensation for murder is familiar to the barbarians of every age: but in Arabia the kinsmen of the dead, are at liberty to accept the atonement, or to exercise with their own hands the law of retaliation. The refined malice of the Arabs refuses even the head of the murderer, substitutes an innocent to the guilty person, and transfers the penalty to the best and most considerable of the race by whom they have been injured. If he falls by their hands, they are exposed in their turn to the danger of reprisals; the interest and principal of the bloody debt are accumulated; the individuals of either family lead a life of malice and suspicion, and 50 years may sometimes elapse before the account of vengeance be finally settled. This sanguinary spirit, ignorant of pity or forgiveness, has been moderated, however, by the maxims of honour, which require in every private encounter some decent equality of age and strength, of numbers and weapons.

189 Annual truce. An annual festival of two, perhaps of four months, was observed by the Arabs before the time of Mahomet; during which their swords were religiously sheathed both in foreign and domestic hostility; and this partial truce is more strongly expressive of the habits of anarchy and warfare. Arabia.

190 Their social qualifications and virtues. "But the spirit of rapine and revenge was attempered by the milder influence of trade and literature. The solitary peninsula is encompassed by the most civilized nations of the ancient world; the merchant is the friend of mankind; and the annual caravans imported the first seeds of knowledge and politeness into the cities, and even the camps of the desert. The arts of grammar, of metre, and of rhetoric, were unknown to the freeborn eloquence of the Arabians; but their penetration was sharp, their fancy luxuriant, their wit strong and sententious, and their more elaborate compositions were addressed with energy and effect to the minds of their hearers. The genius and merit of a rising poet was celebrated by the applause of his own and the kindred tribes. A solemn banquet was prepared, and a chorus of women, striking their cymbals, and displaying the pomp of their nuptials, sung in the presence of their sons and husbands the felicity of their native tribe; that a champion had now appeared to vindicate their rights; that a herald had raised his voice to immortalize their renown. The distant or hostile tribes resorted to an annual fair which was abolished by the fanaticism of the first Moslems; a national assembly that must have contributed to refine and harmonize the barbarians. Thirty days were employed in the exchange, not only of corn and wine, but of eloquence and poetry. The prize was disputed by the generous emulation of the bards; the victorious performance was deposited in the archives of princes and emirs; and we may read in our own language the seven original poems which were inscribed in letters of gold and suspended in the temple of Mecca. The Arabian poets were the historians and moralists of the age; and if they sympathized with the prejudices, they inspired and crowned the virtues of their countrymen. The indissoluble union of generosity and valour was the darling theme of their song: and when they pointed their keenest satire against a despicable race, they affirmed, in the bitterness of reproach, that the men knew not how to give, nor the women to deny. The same hospitality which was practised by Abraham, and celebrated by Homer, is still renewed in the camps of the Arabs. The ferocious Bedoweens, the terror of the desert, embrace, without inquiry or hesitation, the stranger who dares to confide in their honour and to enter their tent. His treatment is kind and respectful: he shares the wealth or the poverty of his host; and, after a needful repose, he is dismissed on his way, with thanks, with blessings, and perhaps with gifts.

191 Love of poetry.

192 Ancient idolatry. "The religion of the Arabs, as well as of the Indians, consisted in the worship of the sun, the moon, and the fixed stars; a primitive and specious mode of superstition. The bright luminaries of the sky display the visible image of a deity: their number and distance convey to a philosophic, or even a vulgar eye, the idea of boundless space: the character of eternity is marked on these solid globes, that seem incapable of corruption or decay: the regularity of their motions may be ascribed to a principle of reason or instinct; and their real or imaginary influence encourages the vain belief that the earth and its inhabitants are the object of their peculiar care. The science of astronomy was cultivated

Arabia. cultivated at Babylon; but the ſchool of the Arabs was a clear firmament and a naked plain. In their nocturnal marches, they ſteered by the guidance of the ſtars: their names, and order, and daily ſtation, were familiar to the curioſity and devotion of the Bedoween; and he was taught by experience to divide in 28 parts the zodiac of the moon, and to bleſs the conſtellations who refreſhed, with ſalutary rains, the thirſt of the deſert. The reign of the heavenly orbs could not be extended beyond the viſible ſphere; and ſome metaphyſical powers were neceſſary to ſuſtain the tranſmigration of ſouls and the reſurrection of bodies; a camel was left to periſh on the grave, that he might ſerve his maſter in another life; and the invocation of departed ſpirits implies that they were ſtill endowed with conſciouſneſs and power. Each tribe, each family, each independent warrior, created and changed the rites and the object of his fantaſtic worſhip; but the nation, in every age, has bowed to the religion as well as to the language of Mecca. The genuine antiquity of the Caaba extends beyond the Chriſtian era. In deſcribing the coaſt of the Red ſea, the Greek hiſtorian Diodorus has remarked between the Thaumaudites and the Sabæans, a famous temple, whoſe ſuperior ſanctity was revered by *all* the Arabians: the linen or ſilken veil, which is annually renewed by the Turkiſh emperor, was firſt offered by a pious king of the Homerites, who reigned 700 years before the time of Mahomet. A tent or a cavern might ſuffice for the worſhip of the ſavages, but an edifice of ſtone and clay has been erected in its place; and the art and power of the monarchs of the eaſt have been confined to the ſimplicity of the original model. A ſpacious portico encloſes the quadrangle of the Caaba; a ſquare chapel, 24 cubits long, 23 broad, and 27 high; a door and a window admit the light; the double roof is ſupported by three pillars of wood; a ſpout (now of gold) diſcharges the rain water, and the well Zemzem is protected by a dome from accidental pollution. The tribe of Koreiſh, by fraud or force, had acquired the cuſtody of the Caaba; the ſacerdotal office devolved through four lineal deſcents to the grandfather of Mahomet; and the family of the Haſhemites, from whence he ſprung, was the moſt reſpectable and ſacred in the eyes of their country. The precincts of Mecca enjoyed the rights of ſanctuary; and, in the laſt month of each year, the city and the temple were crowded with a long train of pilgrims, who preſented their vows and offerings in the houſe of God. The ſame rites which are now accompliſhed by the faithful Muſſulmans were invented and practiſed by the ſuperſtition of the idolaters. At an awful diſtance they caſt away their garments: ſeven times, with haſty ſteps, they encircled the Caaba, and kiſſed the black ſtone; ſeven times they viſited and adored the adjacent mountains; ſeven times they threw ſtones into the valley of Mina; and the pilgrimage was achieved, as at the preſent hour, by a ſacrifice of ſheep and camels, and the burial of their hairs and nails in the conſecrated ground. Each tribe either found or introduced into the Caaba their domeſtic worſhip; the temple was adorned or defiled with 360 idols of men, eagles, lions, and antelopes; and moſt conſpicuous was the ſtatue of Hebal, of red agate, holding in his hand ſeven arrows, without heads or feathers, the inſtruments and ſymbols of profane divination. But this ſtatue was a monument of Syrian arts; the devotion of the ruder ages was content with a pillar or a tablet; and the rocks of the deſert were hewn into gods or altars, in imitation of the black ſtone of Mecca, which is deeply tainted with the reproach of an idolatrous origin. From Japan to Peru, the uſe of ſacrifice has univerſally prevailed; and the votary has expreſſed his gratitude or fear by deſtroying or conſuming, in honour of the gods, the deareſt and moſt precious of their gifts. The life of a man is the moſt precious oblation to deprecate a public calamity; the altars of Phœnicia and Egypt, of Rome and Carthage, have been polluted with human gore, the cruel practice was long preſerved among the Arabs; in the third century, a boy was annually ſacrificed by the tribe of the Dumatians; and a royal captive was pioufly ſlaughtered by the prince of the Saracens, the ally and ſoldier of the emperor Juſtinian. The father of Mahomet himſelf was devoted by a raſh vow, and hardly ranſomed for the equivalent of 100 camels. The Arabs, like the Jews and Egyptians, abſtained from the taſte of ſwine's fleſh; and they circumciſed their children at the age of puberty: the ſame cuſtoms, without the cenſure or the precept of the Koran, have been ſilently tranſmitted to their poſterity and proſelytes; and it has been ſagaciouſly conjectured, that the artful legiſlator indulged the ſtubborn prejudices of his countrymen.

193 The Caaba or temple of Mecca.

194 Sacrifices and rites.

195 Introduction of the Sabians.

"Arabia was free: from the adjacent kingdoms, which were ſhaken by the ſtorms of conqueſt and tyranny, the perſecuted ſects fled to the happy land where they might profeſs what they thought, and practiſe what they profeſſed; and the religions of the Sabians and Magians, of the Jews and Chriſtians, were diſſeminated from the Perſian gulf to the Red ſea. In a remote period of antiquity, Sabianiſm was diffuſed over Aſia by the ſcience of the Chaldeans and the arms of the Aſſyrians. From the obſervations of 2000 years, the prieſts and aſtronomers of Babylon deduced the eternal laws of nature and providence. They adored the ſeven gods or angels who directed the courſe of the ſeven planets, and ſhed their irreſiſtible influence on the earth. The attributes of the ſeven planets, with the twelve ſigns of the zodiac, and the twenty-four conſtellations of the northern and ſouthern hemiſphere, were repreſented by images and taliſmans; and ſeven days of the week were dedicated to their reſpective deities; the Sabians prayed thrice each day; and the temple of the moon at Haran was the term of their pilgrimage. But the flexible genius of their faith was always ready either to teach or to learn. The altars of Babylon were overturned by the Magians; but the injuries of the Sabians were revenged by the ſword of Alexander. Perſia groaned about 500 years under a foreign yoke; and the pureſt diſciples of Zoroaſter eſcaped from the contagion of idolatry, and breathed with their adverſaries the freedom of the deſert. Seven hundred years before the death of Mahomet the Jews were ſettled in Arabia: and a far greater multitude was expelled from the holy land in the wars of Titus and Hadrian. The induſtrious exiles aſpired to liberty and power: they erected ſynagogues in the cities and caſtles in the wilderneſs; and their Gentile converts were confounded with the children of Iſrael, whom they reſembled in the outward mark of circumciſion.

196 The Magians.

197 The Jews.

Arabia.

198 The Chriſtians.

ciſion. The Chriſtian miſſionaries were ſtill more active and ſucceſsful; the Catholics aſſerted their univerſal reign; the ſects whom they oppreſſed ſucceſſively retired beyond the limits of the Roman empire; the Marcionites and Manichæans diſperſed their *fantaſtic* opinions and apocryphal goſpels; the churches of Yemen, and the princes of Hira and Ghaſſan, were inſtructed in a purer creed by the Jacobite and Neſtorian biſhops." Such was the ſtate of religion in Arabia previous to the appearance of Mahomet. See N° 22. *ſupra.*

As the Arabs are one of the moſt ancient nations in the world, having inhabited the country they at preſent poſſeſs almoſt from the deluge, without intermixing with other nations, or being ſubjugated by any foreign power, their language muſt have been formed ſoon after, if not at, the confuſion of Babel. The two principal dialects of it were, that ſpoken by the Hamyarites and other genuine Arabs, and that of the Koreiſh, in which Mahomet wrote the Koran. The firſt is ſtyled by the Oriental writers the *Arabic* of *Hamyar*, and the other *the pure* or *defecated*. As Yarab, grandfather of Hamyar, is ſuppoſed by the Oriental writers to have been the firſt whoſe tongue deviated from the Syriac to the Arabic, the Hamyaritic dialect according to them muſt have approached nearer to the purity of the Syriac; and conſequently have been more remote from the true genius of the Arabic than that of any other tribe. The dialect of the Koreiſh, termed by the Koran *the perſpicuous and clear Arabic*, is referred to Iſhmael as its author; who, ſay the above-mentioned writers, firſt ſpoke it; and, as Dr Pococke believes, after he had contracted an alliance with the family of Jorham by marriage, formed it of their language and the original Hebrew. As, therefore, the Hamyaritic dialect partook principally of the Syriac, ſo that of the Koreiſh was ſuppoſed to conſiſt chiefly of the Hebrew. But, according to Jallalo'ddin, the politeneſs and elegance of the dialect of the Koreiſh ought rather to be attributed to their having, from the remoteſt antiquity, the cuſtody of the Caaba, and dwelling in Mecca the centre of Arabia. The Arabs are full of the commendations of their language, which is very harmonious, expreſſive, and, as they ſay, ſo immenſely copious, that no man uninſpired can be a perfect maſter of it in its utmoſt extent. How much, in this laſt article, it is ſuperior to the Greek and Latin tongues, in ſome meaſure appears from hence, that ſometimes a bare enumeration of the Arabic names of one particular thing, and an explication of them, will make a conſiderable volume. Notwithſtanding this, the Arabs believe the greateſt part of their language to be loſt; which will not ſeem improbable, when we conſider how late the art of writing became generally practiſed among them. For though it was known to Job their countryman, to the Edomites, as well as the other Arabian nations bordering upon Egypt and Phœnicia, and to the Hamyarites many centuries before Mahomet, as appears from ſome ancient monuments ſaid to be remaining in their character: yet the other Arabs, and thoſe of Mecca in particular, unleſs ſuch of them as were either Jews or Chriſtians, were to the time of Moramer perfectly ignorant of it. It was the ancient Arabic language preceding the reign of Juſtinian, which ſo nearly reſembled the Ethiopic; for ſince that time, and eſpecially ſince the age of Mahomet, all the Arabic dialects have been not a little corrupted. This is now the learned language of the Mahometans, who ſtudy it as the European Chriſtians do the Hebrew, Greek, and Latin. Arabia.

199 Letters.

The character uſed by them, the moſt ancient of any peculiar to the Arabs, wherein the letters were not diſtinctly ſeparate, when by the appellation of *Al Moſnad*, from the mutual dependency of its letters or parts upon one another. This was neither publicly taught, nor ſuffered to be uſed, without permiſſion firſt obtained. Could we depend upon what Al Firauzabadius relates from Ebn Haſhem, this character muſt have been of a very high antiquity; ſince an inſcription in it, according to the laſt author, was found in Yaman as old as the time of Joſeph. Be that as it will, Moramer Ebn Morra of Anbar, a city of Irak, who lived not many years before Mahomet, was the inventor of the preſent Arabic character, which Baſhar the Kendian, who married the ſiſter of Abu Sofian, is ſaid to have learned from the houſe of Anbar, and to have introduced at Mecca but a little time before the inſtitution of Mahometiſm. Moramer's alphabet the Oriental authors agree to have been very different from the ancient one of the Hamyarites, ſince they diſtinguiſh the Hamyaritic and Arabic pens. In Mahomet's time, the Morameric alphabet had made ſo ſmall a progreſs, that no one in Yaman could either write or read it; nay, Mahomet himſelf was incapable of doing either; for which reaſon he was called the *illiterate prophet*. The letters of this alphabet were very rude; being either the ſame with, or very much like, the Cufic; which character is ſtill found in inſcriptions and the titles of ancient books; nay, for many years, it was the only one uſed by the Arabs, the Koran itſelf being at firſt written therein. In order to perpetuate the memory of Moramer's invention, ſome authors call the Arabic letters *al Moramer*, i. e. *the progeny of Moramer*. The moſt remarkable ſpecimens of the *Cufic* character (ſo denominated from Cufa, a city of Irak, where ſome of the firſt copies of the Koran were written) are the following: Part of that book in it on vellum, brought from Egypt by Mr Greaves; ſome other fragments of the ſame book in it publiſhed by Sir John Chardin; certain paſſages of a MS. in the Bodleian library; the legends on ſeveral Saracenic coins dug up not many years ago on the coaſt of the Baltic, not far from Dantzic; and, according to Mr Profeſſor Hunt, thoſe noble remains of it that are, or were lately, to be ſeen in Mr Joſeph Ames's valuable collection of antique curioſities. As to the true origin of the ancient and modern Arabic alphabets, we muſt own ourſelves pretty much in the dark. See ALPHABET.

200 Learning.

The Arabian learning may be divided into two periods, viz. *Ante-Mahometan* and *Mahometan*.

The Arab learning, in this firſt period, conſiſted, according to Abulpharagius, in the knowledge of their language, the propriety of diſcourſe, the compoſition of verſe, and the ſcience of the ſtars: but their chief attention ſeems to have been directed to oratory and poetry.

The ſame period is more diſtinguiſhed, at leaſt from the time of Al-Mamon, the ſeventh caliph of the family of the Abaſſides, who flouriſhed about the year 820, and has the honour of being the founder of the

Arabia. the modern Arabian learning. He ſent for all the beſt books out of Chaldea, Greece, Egypt, and Perſia, relating to phyſic, aſtronomy, cosmography, muſic, chronology, &c. and penſioned a number of learned men, ſkilled in the ſeveral languages and ſciences, to tranſlate them into Arabic. By this means, divers of the Greek authors, loſt in their own country and language, have been preſerved in Arabic. From that time Arabia became the chief ſeat of learning; and we find mention by Abulpharagius, Pocoke, D'Herbelot, and Hottinger, of learned men, and books without number.

The revival of learning in the tenth century, by Gerbert, known after his elevation to the pontificate by the title of Silveſter II. and afterwards among the Europeans in general, may be aſcribed to the inſtructions and writings of the Arabian doctors and philoſophers, and to the ſchools which they founded in ſeveral parts of Spain and Italy. And in the 12th century, the inquiſitive of different countries frequented the ſchools of the Saracens in Spain, and diſſeminated the knowledge which they obtained there after their return. At this time, many of the learned productions of the Arabians were tranſlated into Latin, which facilitated the general progreſs of ſcience.

The philoſophy of the Arabians, before Mahomet, was Sabian, and included the ſyſtem and ceremonies of that ſect of idolaters. This it was that Mahomet ſet himſelf to decry; and he is even ſaid by ſome to have carried his oppoſition ſo far, as to prohibit, if not puniſh, all ſtudy of philoſophy. But his followers, by degrees, got over this reſtraint: the love of learning increaſed; till, under the memorable caliphate of Al Mamon, Ariſtotle's philoſophy was introduced and eſtabliſhed among them; and from them propagated with their conqueſts, through Egypt, Africa, Spain, and other parts. As they choſe Ariſtotle for their maſter, they chiefly applied themſelves to that part of philoſophy called *logic*, and thus became proficients in the knowledge of words rather than things. Whence they have been ſometimes denominated *Maſters of the wiſdom of words*; ſometimes the *Talking ſect*. Their philoſophy was involved in quaint arbitrary terms and notions, and their demonſtrations drawn from thence as from certain principles, &c. *Walch Hiſt. Log.* Lib. II. ſec. 2. § 1.

Their phyſic ſucceeded the Grecian; and their phyſicians handed down the art to us, having made conſiderable improvements, chiefly in the pharmaceutical and chemical parts.

It is certain we owe to them moſt of our ſpices and aromatics, as nutmegs, cloves, mace, and other matters of the produce of India. We may add, that moſt of the gentler purgatives were unknown to the Greeks, and firſt introduced by the Arabs, as manna, ſenna, rhubarb, tamarinds, caſſia, &c. They likewiſe brought ſugar into uſe in phyſic, where, before, only honey was uſed. They alſo found the art of preparing waters and oils, of divers ſimples, by diſtillation and ſublimation. The firſt notice of the ſmallpox and the meaſles is likewiſe owing to them. Laſtly, The reſtoration of phyſic in Europe took its riſe from their writings. M. le Clerc has given a ſketch, and Dr Freind an ample hiſtory, of the Arabian phyſic. We have alſo a *Notitia* of all the Arabian phyſicians by Fabricius.

Their poetry may be divided into two ages. The ancient, according to Voſſius, was no other than rhyming; was a ſtranger to all meaſure and rule; the verſes looſe and irregular, confined to no feet, number of ſyllables, or any thing elſe, ſo that they rhymed at the end: oftentimes all the verſes in the poem ended with the ſame rhyme. It is in ſuch verſe that the Alcoran is ſaid to be written. Arabic.

The modern Arabian poetry takes its date from the caliphate of Al Raſchid, who lived toward the cloſe of the eighth century. Under him poetry became an art, and laws of proſody were laid down. Their compariſons, in which they abound, are taken, with little choice, from tents, camels, hunting, and the ancient manners of the Arabs.

201 Mechanical arts.

That ſome of the Arabs had a good degree of knowledge in ſeveral mechanical arts, appears from Strabo, who informs us, that the people of Tamna and the adjacent provinces had magnificent temples, and elegant houſes, built in the Egyptian taſte. The ſame author likewiſe relates, that in Arabia Felix, beſides the huſbandmen, there were many artificers; and amongſt others, thoſe who made palm wine, which, he intimates, was much uſed by the Arabs. As for the exerciſe of arms and horſemanſhip, they looked upon this as one of their principal accompliſhments, being obliged to practiſe and encourage it by reaſon of the independency of their tribes, whoſe frequent jarring made wars almoſt continual amongſt them, which for the moſt part ended in field battles. Hence it became an uſual ſaying amongſt them, that God had beſtowed four peculiar things on the Arabs, viz. *turbans inſtead of diadems, tents inſtead of walls and houſes, ſwords inſtead of intrenchments, and poems inſtead of written laws.* The principal arms uſed by the ancient Arabs were bows and arrows, darts or javelins, and broadſwords or ſcimitars. The bows and arrows were the moſt ancient of theſe; being uſed by Iſhmael himſelf, according to Scripture. It is probable alſo, that ſome of them were acquainted with every branch of the military art cultivated by their neighbours the Egyptians, Syrians, and Phœnicians.

202 Commerce.

Before the Portugueſe interrupted the navigation of the Red ſea, the Arabs were the factors of all the trade that paſſed through that channel. Aden, which is ſituated at the moſt ſouthern extremity of Arabia upon the Indian ocean, was the mart in thoſe parts. The ſituation of its harbour, which opened an eaſy communication with Egypt, Ethiopia, India, and Perſia, had rendered it, for many ages, one of the moſt flouriſhing factories in Aſia. Fifteen years after it had repulſed the great Albuquerque, who attempted to demoliſh it in 1513, it ſubmitted to the Turks, who did not long remain maſters of it. The king of Yemen, who poſſeſſed the only diſtrict in Arabia that merits the title of *Happy*, drove them from thence, and removed the trade to Mocha, a place in his dominions which till then was only a village.

This trade was at firſt inconſiderable; conſiſting principally in myrrh, incenſe, aloes, balm of Mecca, ſome aromatics, and medicinal drugs. Theſe articles, the exportation of which is continually retarded by exorbitant impoſts, and does not exceed at preſent 30,625l. were at that time more in repute than they have been ſince; but muſt have been always of little

conſequence

Arabia. consequence. Soon after a great change enſued from the introduction of coffee.

Though this article is generally uſed in the Arabian entertainments, none but the rich citizens have the pleaſure of taſting the berry itſelf. The generality are obliged to content themſelves with the ſhell and the huſk of this valuable production. Theſe remains, ſo much deſpiſed, make a liquor of a pretty clear colour, which has a taſte of coffee without its bitterneſs and ſtrength. Theſe articles may be had at a low price at Betelfagui, which is the general market for them. Here likewiſe is ſold all the coffee which comes out of the country by land. The reſt is carried to Mocha, which is 35 leagues diſtant, or to the nearer ports of Loheia or Hodeida, from whence it is tranſported in ſmall veſſels to Jodda. The Egyptians fetch it from the laſt mentioned place, and all other nations from the former,

The quantity of coffee exported may be eſtimated at twelve millions five hundred and fifty thouſand weight. The European companies take off a million and a half; the Perſians three millions and a half; the fleet from Suez ſix millions and a half; Indoſtan, the Maldives, and the Arabian colonies on the coaſt of Africa, fifty thouſand; and the caravans a million.

As the coffee which is bought up by the caravans and the Europeans is the beſt that can be procured, it coſts about 8½d. a pound. The Perſians, who content themſelves with that of an inferior quality, pay no more than about 6½d. a pound. The Egyptians purchaſe it at the rate of about 8d.; their cargoes being compoſed partly of good and partly of bad coffee. If we eſtimate coffee at about 7⅞d. a pound, which is the mean price, the profits accruing to Arabia from its annual exportation will amount to 384,343l. 15s. This money does not go into their coffers; but it enables them to purchaſe the commodities brought from the foreign markets to their ports of Jodda and Mocha.

Mocha receives from Abyſſinia, ſheep, elephants teeth, muſk, and ſlaves. It is ſupplied from the eaſtern coaſt of Africa with gold, ſlaves, amber, and ivory; from the Perſian gulf, with dates, tobacco, and corn; from Surat, with a vaſt quantity of coarſe, and a few fine linens; from Bombay and Pondicherry, with iron, lead, and copper, which are carried thither from Europe; from Malabar, with rice, ginger, pepper, Indian ſaffron, with coire, cardamom, and alſo with planks; from the Maldives, with gum, benzoin, aloes wood, and pepper, which theſe iſlands take in exchange; from Coromandel, with 400 or 500 bales of cottons, chiefly blue. The greateſt part of theſe commodities, which may fetch 262,500l. are conſumed in the interior parts of the country. The reſt, particularly the cottons are diſpoſed of in Abyſſinia, Socotora, and the eaſtern coaſt of Africa.

None of the branches of buſineſs which are managed at Mocha, as well as throughout all the country of Yaman, or even at Sanaa the capital, are in the hands of the natives. The extortions with which they are perpetually threatened by the government deter them from interfering in them. All the warehouſes are occupied by the Banians of Surat or Guzerat, who make a point of returning to their own country as ſoon as they have made their fortunes. They then reſign their ſettlements to merchants of their own nation, who retire in their turn, and are ſucceeded by others. Arabia.

The European companies, who enjoy the excluſive privilege of trading beyond the Cape of Good Hope, formerly maintained agents at Mocha. Notwithſtanding it was ſtipulated by a ſolemn capitulation, that the impoſts demanded ſhould be rated at two and a quarter *per cent.* they were ſubject to frequent extortions: the governor of the place inſiſting on their making him preſents which enabled him to purchaſe the favour of the courtiers, or even of the prince himſelf. However the profits they obtained by the ſale of European goods, particularly cloths, made them ſubmit to theſe repeated humiliations. When theſe ſeveral articles were furniſhed by Grand Cairo, it was then impoſſible to withſtand the competition, and the fixed ſettlements were therefore given up.

The trade was carried on by ſhips that ſailed from Europe with iron, lead, copper, and ſilver, ſufficient to pay for the coffee they intended to buy. The ſupercargoes, who had the care of theſe tranſactions, ſettled the accounts every time they returned. Theſe voyages, which at firſt were pretty numerous and advantageous, have been ſucceſſively laid aſide. The plantations of coffee, made by the European nations in their colonies, have equally leſſened the conſumption and the price of that which comes from Arabia. In proceſs of time, theſe voyages did not yield a ſufficient profit to anſwer the high charges of undertaking them on purpoſe. The companies of England and France then reſolved, one of them to ſend ſhips from Bombay, and the other from Pondicherry, to Mocha, with the merchandiſe of Europe and India. They even frequently had recourſe to a method that was leſs expenſive. The Engliſh and French viſit the Red ſea every year. Though they diſpoſe of their merchandiſe there to good advantage, they can never take in cargoes from thence for their return. They carry, for a moderate freight the coffee belonging to the companies, who lade the veſſels with it, which they deſpatch from Malabar and Coromandel to Europe. The Dutch company, who prohibit their ſervants from fitting out ſhips, and who ſend no veſſels themſelves to the gulf of Arabia, are deprived of the ſhare they might take in this branch of commerce. They have alſo given up a much more lucrative branch, that of Jodda.

Jodda is a port ſituated near the middle of the gulf of Arabia, 20 leagues from Mecca. The government there is of a mixed kind: the grand ſignior and the xeriff of Mecca ſhare the authority and the revenue of the cuſtoms between them. Theſe impoſts are levied upon the Europeans at the rate of 8 *per cent.* and upon other nations at 13. They are always paid in merchandiſe, which the managers oblige the merchants of the country to buy at a very dear rate. The Turks who have been driven from Aden, Mocha, and every part of Yaman, would long ago have been expelled from Jodda, if there had not been room to apprehend that they might revenge themſelves in ſuch a manner as to put an end to their pilgrimages and commerce.

203 Coins. The coins which are current at Mocha, the principal port of the Red ſea, are dollars of all kinds; but they abate five *per cent.* on the pillar dollars, becauſe they are reckoned not to be the pureſt ſilver, and the dollar,

Arabic || Aracan.

dollar weight with them is 17 drachms 14 grains. All their coins are taken by weight, and valued according to their pureneſs. The gold coins current here are ducats of Venice, Germany, Turkey, Egypt, &c. The comaſſes are a ſmall coin, which are taken at ſuch a price as the government ſets on them; and they keep their accounts in an imaginary coin, called *cabeers*, of which 80 go to a dollar. For an account of the ancient coins called *dinars* and *dirhems*, ſee theſe two articles.

Gum ARABIC. See GUM.

ARABICI, a ſect who ſprung up in Arabia about the year 207, whoſe diſtinguiſhing tenet was, that the ſoul died with the body, and alſo roſe again with it.

Euſebius, lib. vi. c. 38. relates, that a council was called to ſtop the progreſs of this riſing ſect; and that Origen aſſiſted at it, and convinced them ſo thoroughly of their error that they abjured it.

ARABIS, BASTARD TOWER MUSTARD. See BOTANY *Index*.

ARABISM, ARABISMUS, an idiom or manner of ſpeaking peculiar to the Arabs or the Arabic language.

ARABIST, a perſon curious of, and ſkilled in, the learning and languages of the Arabians: ſuch were Erpenius and Golius. The ſurgeons of the 13th century are called *Arabiſts* by Severinus.

ARABLE LANDS, thoſe which are fit for tillage, or which have been formerly tilled.

ARACAN, the capital of a ſmall kingdom to the north-eaſt of the bay of Bengal, ſituated in E. Long. 93. 0. N. Lat. 20. 30. It has the conveniency of a ſpacious river, and a harbour large enough to hold all the ſhips in Europe. It is ſaid by Schouten to be as large as Amſterdam; but the houſes are ſlight, being made with palm trees and bamboo canes, and covered with leaves of trees. They are ſeldom above ſix feet high, but have many windows or air-holes. But the people of the higheſt rank are much better accommodated. They have no kitchens, chimneys, or cellars, which obliges the women to dreſs the victuals out of doors. Some of the ſtreets are on the ridges of rocks, wherein are a great many ſhops. Their orchards and gardens contain all the fruits common to the Indies, and their trees are green all the year. Their common drink is toddy; which is the ſap of the cocoa-tree, and when new, will intoxicate like wine, but ſoon grows ſour. Elephants and buffaloes are very numerous here, and are made uſe of inſtead of horſes. They have plenty of proviſions, and but little trade: for when Mr Charnock was here in 1686, with ſix large ſhips, there was nothing to be had in the way of commerce; and yet the country produces lead, tin, ſtick lac, and elephants teeth. The Mogul's ſubjects come here to purchaſe theſe commodities; and ſometimes meet with diamonds, rubies, and other precious ſtones. They were formerly governed by a king of their own, called the king of the *White Elephant*; but this country has been conquered by the king of Pegu. They pay little or no regard to the chaſtity of their women, and the common ſailors take great liberties among them. Their religion is Paganiſm; and the idols, temples, and prieſts are very numerous. The dreſs of the better ſort is very ſlight, for it conſiſts chiefly of a piece of white cotton over their arms, breaſt, and belly, with an apron before. The complexion of the women is tolerable: they wear thin flowered gauze over their breaſt and ſhoulders, and a piece of cotton, which they roll three or four times round their waiſt, and let it hang as low as their feet. They curl their hair, and put glaſs rings in their ears, and ſtretch them of a monſtrous length. On their arms and legs they have hoops of copper, ivory, ſilver, &c. The country produces great quantities of rice, and the water is good. Their flocks of ſheep and herds of cattle are alſo numerous near Aracan; but what they ſay of the towns and villages, with which the country is pretended to be overſpread, may be doubted. Captain Hamilton affirms, that there are but few places inhabited, on account of the great number of wild elephants and buffaloes, which would deſtroy the fruits of the ground; and that the tigers would deſtroy the tame animals. There are ſome villages near the ſea, inhabited by a few miſerable fiſhermen, who can juſt keep themſelves from ſtarving, though they are out of the reach of oppreſſion. The rich burn the dead bodies; but the poor, who are not able to buy wood, throw them into the river.

Aracan || Arack.

ARACHIS. See BOTANY *Index*.

ARACHNE, in fabulous hiſtory, a young maid of Lydia, ſaid to have been the inventreſs of ſpinning. She is fabled to have been ſo ſkilful in this art, as to challenge Minerva at it; who tore her work, and ſtruck her, which diſgrace driving her to deſpair, ſhe hanged herſelf. Minerva from compaſſion brought her to life and transformed her into a ſpider, which ſtill employs itſelf in ſpinning.

ARACHNOIDES, in *Anatomy*, an appellation given to ſeveral membranes; as the tunic of the cryſtalline humour of the eye, the external lamina of the pia mater, and one of the coverings of the ſpinal marrow.

ARACK, ARRACK, or RACK, a ſpirituous liquor imported from the Eaſt Indies, uſed by way of dram and in punch.

The word *arack*, according to Mr Lockyer, is an Indian name for ſtrong waters of all kinds: for they call our ſpirits and brandy *Engliſh arack*. But what we underſtand by the name *arack*, he affirms, is really no other than a ſpirit procured by diſtillation from a vegetable juice called *toddy*, which flows by inciſion out of the cocoa-nut tree, like the birch juice procured among us. The toddy is a pleaſant drink by itſelf, when new, and purges thoſe who are not uſed to it: and, when ſtale, it is heady, and makes good vinegar. The Engliſh at Madras uſe it as leaven to raiſe their bread with.

Others are of opinion, that the arack or arrack, is a vinous ſpirit obtained by diſtillation, in the Eaſt Indies, from rice or ſugar, fermented with the juice of cocoa nuts.

The Goa arack is ſaid to be made from the toddy, the Batavia arack from rice and ſugar; and there is likewiſe a kind of ſhrub from which arack is made.

Goa and Batavia are the chief places for arack. At Goa there are divers kinds; ſingle, double, and treble diſtilled. The double diſtilled, which is that commonly ſent abroad, is but a weak ſpirit in compariſon with Batavia arack; yet, on account of its peculiar and agreeable flavour, is preferred to all the other aracks of India. This flavour is attributed to the earthen veſ-

Arack. sels which they use at Goa to draw the spirit; whereas at Batavia they use copper stills.

The Parier arack made at Madras, and the Columbo and Quilone arack at other places, being fiery hot spirits, are little valued by the Europeans, and therefore rarely imported; though highly prized among the natives. In the best Goa arack, the spirits of the cocoa juice do not make above a sixth or eighth part.

The manner of making the Goa arack is this: The juice of the trees is not procured in the way of tapping, as we do; but the operator provides himself with a parcel of earthen pots, with bellies and necks like our ordinary bird bottles: he makes fast a number of these to his girdle, and any way else that he commodiously can about him. Thus equipped, he climbs up the trunk of a cocoa tree; and when he comes to the boughs, he takes out his knife, and cutting off one of the small knots or buttons, he applies the mouth of the bottle to the wound, fastening it to the bough with a bandage; in the same manner he cuts off other buttons, and fastens on his pots, till the whole number is used: this is done in the evening, and descending from the tree, he leaves them till the next morning; when he takes off the bottles, which are mostly filled, and empties the juice into the proper receptacle. This is repeated every night, till a sufficient quantity is produced; and the whole being then put together, is left to ferment, which it soon does. When the fermentation is over, and the liquor or wash is become a little tart, it is put into the still, and a fire being made, the still is suffered to work as long as that which comes over has any considerable taste of spirit.

The liquor thus procured is the low wine of arack; and this is so poor a liquor, that it will soon corrupt and spoil, if not distilled again, to separate some of its phlegm; they therefore immediately after pour back this low wine into the still, and rectify it to that very weak kind of proof spirit, in which state we find it. The arack we meet with, notwithstanding its being of a proof test, according to the way of judging by the crown of bubbles, holds but a sixth, and sometimes but an eighth part of alcohol, or pure spirit; whereas our other spirits, when they show that proof, are generally esteemed to hold one half pure spirit. *Shaw's Essay on Distilling.*

There is a paper of observations on arack, in the *Melanges d'Histoire Natur.* tom. v. p. 302. By fermenting, distilling, and rectifying the juice of the American maple, which has much the same taste as that of the cocoa, the author says, he made arack not in the least inferior to any that comes from the East Indies; and he thinks the juice of the sycamore and of the birch trees would equally answer the end.

Besides the common sorts of Goa and Batavia arack, there are two others less generally known; these are the bitter arack and the black arack.

By stat. 11th Geo. I. c. 30. arack, on board a ship within the limits of any port of Great Britain, may be searched for and seized, together with the package; or if found unshipping or unshipped, before entry, may be seized by the officers of excise, in like manner as by the officers of the customs.—Upon an excise officer's suspicion of the concealment of arack, and oath made of the grounds of such suspicion before the commissioners or a justice of peace, they may empower him to enter such suspected places, and seize the liquors, with the casks, &c. If the officers are obstructed, the penalty is 100l. Arack || Aradius.

Arack is not to be sold out in warehouses, entered as directed in the 6th of Geo. I. c. 21. upon forfeiture, and the casks, &c. If permits are not returned which are granted for the removal of arack, or if the goods are not sent away within the time limited, the penalty is treble the value If the permits are not returned, and the decrease is not found to be sufficient, the like quantity is forfeited. Permits are not to be taken out but by direction in writing of the proprietor of the stock, or his known servant, upon forfeiture of 50l. or three months imprisonment.

By stat. 9th Geo. II. c. 35. if arack is offered to sale without a permit, or by any hawker, pedlar, &c. with a permit, the person to whom it is offered may seize and carry it to the next warehouse belonging to the customs or excise, and bring the person offering the same before any justice of the peace, to be committed to prison, and prosecuted for the penalties incurred by such offence. The person seizing such goods may prosecute in his own name; and on recovery is entitled to one-third part of the gross produce of the sale; and the commissioners are, if desired, upon a certificate from the justice of the offender's being committed to prison, to advance to the seizer 15s. per gallon for the arack so seized.

Arack (except for the use of seamen, two gallons each) found in any ship or vessel arrived from foreign parts, at anchor, or hovering within the limits of any port, or within two leagues of the shore; and not proceeding on her voyage (unless in case of unavoidable necessity and distress of weather, notice whereof must be given to the collector or chief officer of the port upon the ship's arrival), is forfeited, with the boxes, casks, or other package, or the value thereof.

Arack is also the name of a spirituous liquor made by the Tartars of Tungusia, of mares milk, left to sour, and afterwards distilled twice or thrice between two earthen pots closely stopped, whence the liquor runs through a small wooden pipe. It is more intoxicating than brandy.

ARAD, in *Ancient Geography*, a city lying to the south of Judah and the land of Canaan, in Arabia Petræa. The Israelites having advanced towards the land of Canaan (Numb. xxi. 1.), the king of Arad opposed their passage, defeated them, and took a great booty from them; but they destroyed his country as soon as they became masters of the land of Canaan (Numb. xxxiii.) Arad was rebuilt, and Eusebius places it in the neighbourhood of Kades, at the distance of 20 miles from Hebron. The Israelites, in their passage through the wilderness, having departed from Sepher, came to Arad, and from thence to Makkelath.

ARADUS, in *Ancient Geography*, an island between the borders of Phœnicia and Seleucia, at the distance of 20 stadia from a dangerous coast: all of it a rock surrounded by the sea, in compass seven stadia; and forming a very powerful city and republic. It is now called *Ronad;* but not a single wall is remaining of all that multitude of houses which, according to Strabo, were built with more stories than even those of Rome. The liberty enjoyed by the inhabitants had rendered it very populous; and it subsisted by naval commerce,

Aræ Philænon, Araeometer.

commerce, manufactures, and arts. At preſent the iſland is deſerted; nor has tradition even retained the memory of a ſpring of freſh water in its environs, which the people of Aradus diſcovered at the bottom of the ſea, and from which they drew water in time of war by means of a leaden bell and a leathern pipe fitted to its bottom.

ARÆ PHILÆNON, or PHILÆNORUM (Strabo); to the ſouth of the Syrtis Major; but in Peutinger more weſterly, to the ſouth almoſt of the Syrtis Minor. In Strabo's time, the altars were not extant, but a village of the ſame name ſtood on the ſpot. On a diſpute about limits, between the Cyreneans and Carthaginians, it was agreed that two of each people ſhould ſet out on the ſame day, and that where they ſhould happen to meet, there the limits of both ſhould be fixed. The Philæni, two brothers, Carthaginians, undertook it for Carthage: theſe, after having advanced a great many miles into the territory of the Cyreneans, were met by their antagoniſts; who, enraged at their being beforehand with them ſo far, gave them the option of either returning back, or of being buried alive on the ſpot. Like zealous patriots, they choſe the latter; and there the Carthaginians raiſed two altars in honour of the Philæni. (Salluſt, Valerius Maximus.)

ARÆOMETER, an inſtrument to meaſure the denſity or gravity of fluids.

The araeometer, or waterpoiſe, is uſually made of glaſs; conſiſting of a round hollow ball, which terminates in a long ſlender neck hermetically ſealed at top: there being firſt as much running mercury put into it as will ſerve to balance or keep it ſwimming in an ereſt poſition.

The ſtem is divided into degrees (as repreſented Plate XXXVI. fig. 23); and by the depth of its deſcent into any liquor, the lightneſs of that liquor is concluded: for that fluid in which it ſinks leaſt muſt be heavieſt; and that in which it ſinks loweſt lighteſt.

Mr Homberg has invented an araeometer, deſcribed in Phil. Tranſact. N° 262. thus: *A* is a glaſs bottle or matraſs, with ſo ſlender a neck that a drop of water takes up in it above five or ſix lines, or half of an inch. Near that neck is a ſmall capillary tube *D*, about ſix inches long, and parallel to the neck.—To fill the veſſel, the liquor is poured in at the mouth *B* (which is widened to receive a tunnel), till it run out at *D*, that is, till it riſe in the neck to the mark *C*, by which means you have always the ſame bulk or quantity of liquor; and conſequently, by means of the balance, can eaſily tell, when different liquors fill it, which weighs moſt, or is moſt intenſely heavy.

Some regard, however, is to be had in theſe trials to the ſeaſon of the year, and degree of heat and cold in the weather; becauſe ſome liquors rarefy with heat and condenſe with cold more than others, and accordingly take up more or leſs room.

By means of this inſtrument, the ingenious author has made a table to ſhow the different weights of the ſame bulk of the moſt conſiderable chemical liquors both in ſummer and winter, as follows:

The araeometer full of	Weighed in ſummer. oz. dr. gr.	In winter. oz. dr. gr.
Quickſilver, -	11 00 06	11 00 32
Oil of tartar, -	01 03 08	01 03 31
Spirit of urine, -	01 00 32	01 00 43
Oil of vitriol, -	01 03 38	01 04 05
Spirit of nitre, -	01 01 40	01 01 70
Spirit of ſalt, -	01 00 29	01 0 47
Aquafortis, -	01 01 38	01 01 55
Vinegar, -	00 07 55	00 07 60
Spirit of wine, -	00 06 47	00 06 61
River water, -	00 07 53	00 07 57
Diſtilled water, -	00 07 50	00 07 54

Araeometer.

The inſtrument itſelf weighed, when empty, one drachm twenty eight grains. See HYDROMETER.

ARÆOPAGUS. See AREOPAGUS.

ARÆOSTYLE, in *Architecture*, a term uſed by Vitruvius, to ſignify the greateſt interval which can be made between columns.

ARÆOTICS, in *Medicine*, remedies which rarefy the humours, and render them eaſy to be carried off by the pores of the ſkin.

ARAF, among the Mahometans. See ALARAF.

ARAFAH, the ninth day of the laſt month of the Arabic year, named *Dhoulhegiat*; on which the pilgrims of Mecca perform their devotions on a neighbouring mountain called *Arafat*. The Mahometans have a very great veneration for this mountain, becauſe they believe that Adam and Eve, after they were baniſhed out of Paradiſe, having been ſeparated from each other during 120 years, met afterwards on this mountain.

ARAFAT, or GIBEL EL ORPHAT, *the mountain of knowledge*, a mountain in Arabia near Mecca. The Mahometans ſay this was the place where Adam firſt met with and knew his wife Eve after their expulſion from Paradiſe. This mountain not being large enough to contain all the devotees that come annually in pilgrimage to Mecca, ſtones are ſet up all round it to ſhow how far it reaches. The pilgrims are clad in robes of humility and mortification, with their heads uncovered. They ſeem to be very much affected; for the tears flow down their cheeks, and they ſob and ſigh moſt bitterly, begging earneſtly for remiſſion of ſins, and promiſing to lead a new life. They continue here about four or five hours, and at half an hour after ſunſet they all decamp to perform a religious duty called *Aſham nomas*. After this, they all receive the honourable title of *hadgees*, which is conferred upon them by the imam or prieſt. This being pronounced, the trumpet ſounds, and they all return to Mecca.

ARAGON. See ARRAGON.

ARAL, a great lake in the kingdom of Khowarazm, lying a little to the eaſtward of the Caſpian ſea. Its length from north to ſouth is ſaid to be near 150 miles, and its breadth from eaſt to weſt about 70. The ſhore on the weſt ſide is high and rocky, and deſtitute of good water: yet there are abundance of wild horſes, aſſes, antelopes, and wolves; as alſo a fierce creature called a *ſeliauri*, which the Tartars ſay is of ſuch a prodigious ſtrength as to carry off a horſe. It is ſurpriſing that this lake ſhould be quite unknown to geographers till within theſe few years. Several great rivers, which were ſuppoſed to run into the Caſpian ſea, are now known to fall into this lake, particularly the Sihun or Sirr, and the Ghihun or Amo, ſo often

Arahum || Aranjuez.

mentioned by the Oriental hiſtorians. This lake, like the Caſpian ſea, has no viſible outlet. Its water is alſo very ſalt; and for that reaſon is conveyed by the neighbouring inhabitants by ſmall narrow canals into ſandy pits, where the heat of the ſun, by exhaling the water, leaves them a ſufficient quantity of ſalt. The ſame kinds of fiſh are found in the Aral that are found in the Caſpian ſea. The former is alſo called the *Lake of Eagles*.

ARAHUM, or HARAHUM, in ancient writers, denotes a place conſecrated or ſet apart for holy purpoſes. Hence the phraſe *in arabo jurare*, or *conjurare*, "to make oath in the church;" becauſe, by the Ripuarian laws, all oaths were to be taken in the church on the relicks of the ſaints.

ARALIA, the ANGELICA TREE. See BOTANY *Index*.

ARAM, or *Aramæa Regio*, in *Ancient Geography*, the Hebrew name of Syria, ſo called from Aram the ſon of Shem, (Moſes, Joſephus).

ARAM Beth-Rehob, in *Ancient Geography*, was that part of Syria lying to the north of Paleſtine; becauſe Rehob was its boundary towards that quarter, (Moſes); allotted to the tribe of Aſher, (Judges); where it joins Sidon, (Joſhua).

ARAM-Dammaſek, or Syria Damaſcena, in *Ancient Geography*, a principal part of Syria, and more powerful than the reſt (2 Sam.), taking its name from Damaſcus, the principal city.

ARAM-Maacha, in *Ancient Geography*, a diſtrict of Syria, at the foot of Mount Hermon. (2 Samuel, 1 Chronicles); on the borders of the half tribe of Manaſſeh, on the other ſide the Jordan, called the coaſt of *Maachathi*, (Moſes, Joſhua).

ARAM-Naharaim, in *Ancient Geography*, i. e. Aram or Syria of the Rivers, or Meſopotamia, ſituated between the Euphrates and Tigris; which is the reaſon of the name.

ARAM-Soba, or *Zoba*, in *Ancient Geography*, which David conquered, was a country near the Euphrates, where afterwards Palmyra ſtood: the Euphrates bounded it on the eaſt, as the land of Canaan and Syria Damaſcena did on the weſt, (2 Samuel).

ARAMONT, a town of Languedoc in France, ſeated on the river Rhone. E. Long. 4. 52. N. Lat. 43. 54.

ARANEA, the SPIDER. See ENTOMOLOGY *Index*.

ARANJUEZ, a town in the province of New Caſtile, where the king of Spain has a palace and gardens which are reckoned the moſt delightful in the world.

This place is 20 miles from Madrid, by a noble road, planted on each ſide with trees, lately made at the expence of 120,000l. ſterling. It is delightfully ſituated at the conflux of the rivers Tagus and Jarama; which run through the gardens, and add new beauty to this charming ſpot, where art and nature ſeem to go hand and hand with the moſt pleaſing and rural ſimplicity. On one ſide, fine avenues of ſtately oaks and lofty elms convey the trueſt ideas of magnificence, while they afford the moſt reviving ſhade; on the other, the ſudden tranſitions to lawns and wilderneſs, the caſcades of water breaking through the thickets, the tuneful ſongs of numberleſs birds ſheltered in theſe cool receſſes, the occaſional appearance and paſſage of the monarch attended by the grandees of his kingdom; all theſe objects united, and concentred in one point, fill the imagination with pleaſing ideas, and impreſs the mind of a traveller with a thouſand agreeable ſenſations. Aranjuez.

The general ſituation is in a very large plain ſurrounded with large hills, of a moſt diſagreeable aſpect indeed, but ſeldom appearing, being well hidden by the noble rows of trees that extend acroſs the flat in every direction. The main body of the palace is an old building, to which have been lately added two new wings. The firſt part of the building was erected by Philip II. who purchaſed the eſtate, planted many of the avenues, and, in order to extend his chaſe, or to indulge his ſplenetic diſpoſition, had all the vines that grew on the hills rooted up. By that means he drove away the inhabitants, and rendered the environs of his villa a perfect deſert.—The apartments are good; but contain nothing very particular to take off from the enjoyment of ſo many fine objects abroad. In one of the new wings is a playhouſe, and in the other a chapel. Part of the ceiling of the former was painted by Mengs, who was alſo ſent to Rome to paint a holy family for the principal altar in the chapel. There are ſeven fine pictures of Luca Jordano in the apartment called *El Cabinete Antiguo*, and ſix others in that *De los Mayordomos*. The portraits of the grand duke and ducheſs of Tuſcany, by Mengs, are in a new apartment called the *king's dreſſing room*. In the chapel, over the great altar, there is a fine picture of the Annunciation, by Titian, preſented by him to Charles V. and brought from the convent of Juſte, after the death of that emperor. The porcelain cabinet, where there are ſeveral large pieces of the king's own manufacture, is alſo an object of curioſity to a traveller.

As to the gardens, the whole of them may be thrown into three grand diviſions, diſtinguiſhed by the names of La Huerta Valenciana, Los Deleites, and El Cortijo. In the Huerta Valenciana, agriculture and gardening are carried on in the ſame manner as in that fruitful province, and they plough with horſes. In the Cortijo they uſe oxen, as in Andaluſia; and in other places they ſcratch up the ground with mules, as is ſtill practiſed in ſome parts of Spain. Whichever way one looks round, a conſtant variety pleaſes the eye, and enraptures the mind. At one moment the ſturdy buffalo moves before you, drawing his heavy burden; ſoon after, the ſlow camel, with his ponderous load; while the ſwift zebra with his ſtriped garment friſks over the plains. If you approach the farm, every object of convenience is conſulted, and in the dairy every degree of neatneſs. The Dutch cow enjoys a luxuriant paſture, the brood mares greatly enliven the landſcape, and the ſtables are filled with the moſt excellent horſes; and an immenſe nurſery furniſhes all manner of trees and plants. The fine avenue, which ſerves alſo for a public walk, called *Calle de Reyna*, has nothing equal to it at Verſailles. It is three miles long, quite ſtraight from the palace gate, croſſing the Tagus twice before it loſes itſelf in the thickets, where ſome noble ſpreading elms and weeping poplars hang beautifully over the deep ſtill pool. Near this road is a flower garden for the ſpring, laid out with great taſte by Mr Wall during his miniſtry. The gay variety of flowers

at

Aranjuez, Arar.

at this time of year is particularly pleaſing to the eye; but its beauty ſoon fades on the approach of ſummer. As the weather grows hot, the company that chooſe to walk retire to a garden in an iſland of the Tagus, on the north ſide of the palace. This is a heavenly place, cut into various walks and circular lawns, which in their primitive ſtate may have been very ſtiff and formal: but in the courſe of a century, Nature has obliterated the regular forms of art; the trees have ſwelled out beyond the line traced for them, and deſtroyed the enfilade by advancing into the walks or retiring from them. The ſweet flowering ſhrubs, inſtead of being clipped and kept down, have been allowed to ſhoot up into trees, and hang over the ſtatues and fountains they were originally meant to ſerve as humble fences to. The jets-d'eau daſh up among the trees, and add freſh verdure to the leaves. The terraces and baluſtrades built along the river, are now overgrown with roſes, and other luxuriant buſhes, hanging down into the ſtream, which is darkened by the large trees growing on the oppoſite banks. Many of the ſtatues, groupes, and fountains, are handſome, ſome maſterly, the works of Algardi: all are placed in charming points of view, either in open circular ſpots, at a diſtance from the trees, or elſe in gloomy arbours, and retired angles of the wood. The banks of this wood, called the Ila, are alſo enlivened by elegant yachts for the amuſement of the royal family.

The town or village formerly conſiſted of the palaces, its offices, and a few miſerable huts, where the ambaſſadors, and the attendants of the court, endeavoured to lodge themſelves as well as they could, but always very uncomfortably; many of the habitations were vaults half under ground. What determined the king to build a new town, and to embelliſh the environs, was an accident that happened at the nuncio's; a coach broke through the ceiling of his dining-room, and fell in upon the table. The court then began to apply very conſiderable ſums to the purpoſe of erecting proper dwellings for the great number of perſons that flock to the place where the ſovereign reſides; near 10,000 are ſuppoſed to live here two or three months in ſpring; the king keeps 115 ſets of mules, which require a legion of men to take care of them. Above a million ſterling has been laid out at Aranjuez ſince the year 1763; and it muſt be acknowledged, that wonders have been performed: ſeveral fine ſtreets drawn in ſtraight lines with broad pavements, a double row of trees before the houſes, and a very noble road in the middle; commodious hotels for the miniſters and ambaſſadors; great ſquares, markets, churches, a theatre, and an amphitheatre for bull feaſts, have been raiſed from the ground; beſides the acceſſion of two new wings to the palace. Neatneſs and convenience have been more ſtudied and ſought for than ſhow in the architecture, but altogether the place has ſomething truly magnificent in the coup d'œil.

ARAR, (Cæſar, Strabo); *Araris*, (Dio Caſſius); *Saucona*, (Ammian): A river of Celtic Gaul, now the *Saone*; which riſes out of Mount Vogeſus on the confines of Lorrain, runs through the Franche Comtè and Burgundy, and below Lyons falls into the Rhone. It is ſo incredibly ſlow, that the eye cannot diſtinguiſh which way it moves, (Cæſar); and therefore Pliny calls it the *Sluggiſh river*. Its courſe is from north to ſouth. It is famous for a bridge of Cæſar, which was built by the ſoldiers in one day. It is navigable equally with the Rhone. Ararat.

ARARAT, the name of the mountain on which Noah's ark reſted, after the abatement of the waters of the univerſal deluge. Concerning this mountain there are various conjectures; though it is almoſt univerſally allowed to be in Armenia Major. Some are of opinion that it is one of the mountains which divide Armenia on the ſouth from Meſopotamia and that part of Aſſyria inhabited by the *Curds*; from whom theſe mountains took the name of *Curdu* or *Cardu*, by the Greeks turned into *Gordyæi*, &c. Others, that it lies towards the middle of Armenia, near the river Araxes, above 280 miles diſtant from the above-mentioned mountains, making it belong to Mount Taurus; but the Armenians are poſitive that Noah's Ararat is no other than a mountain to which they now give the name of *Maſis*, which lies about 12 leagues to the eaſt of Erivan, and four leagues from the Aras. It is encompaſſed by ſeveral petty hills: on the tops of them are found many ruins, thought to have been the buildings of the firſt men, who were, for ſome time, afraid to deſcend into the plains. It ſtands by itſelf, in form of a ſugar-loaf, in the midſt of a very large plain, detached, as it were, from the other mountains of Armenia, which make a long chain. It conſiſts, properly ſpeaking, of two hills; the leſſer of which is the more ſharp and pointed: the higher, on which it is laid the ark reſted, lies to the north-weſt of it, and riſes far above the neighbouring mountains. It ſeems ſo high and big, that, when the air is clear, it may be ſeen four or five days journey off; yet travellers think the height is not extraordinary. Chardin is of opinion that he paſſed a part of Mount Caucaſus which is higher; and Poullet thinks the height of Mount Maſis, or Ararat, not above twice as great as that of Mount Valerian near Paris. They therefore think that its being viſible at ſuch a great diſtance is owing to its lonely ſituation in a vaſt plain and upon the moſt elevated part of the country, without any mountains before it to obſtruct the view. Nor is the ſnow with which it is always covered from the middle upwards any argument of its height; for in this country, ice hath often been obſerved in the mornings of the middle of July. (See ARMENIA). Certain it is, however, that this mountain hath never yet been aſcended; which the Armenians pretend was owing to the interpoſition of angels, in order to diſappoint the curioſity of thoſe who wanted to advance to ſuch a ſacred place as that whereon the ark reſted: but the exceſs of cold may very reaſonably be ſuppoſed able to fruſtrate all ſuch attempts, without any ſupernatural interpoſition. The moſt diſtinct account we have of this mountain is that given by M. Tournefort: which, however, being much ſwelled with immaterial circumſtances, it is needleſs to trouble our readers with at length. He tells us, that this mountain is one of the moſt diſagreeable ſights upon earth, without either houſes, convents, trees, or ſhrubs; and ſeems as if continually waſting and mouldering away. He divides it into three regions: The lowermoſt, he ſays, is the only one which contains any human creatures, and is occupied by a few miſerable ſhepherds that tend ſcabby flocks; and here are alſo found ſome partridges: the ſecond is inhabited by crows and tigers; and all the

Ararat || Aratus.

the reſt is covered with ſnow, which half the year is involved in thick clouds. On the ſide of the mountain that looks toward Erivan is a prodigious precipice, from whence rocks of an immenſe ſize are continually tumbling down with a hideous noiſe. This precipice ſeems quite perpendicular; and the extremities are rough and blackiſh, as if ſmutted with ſmoke. The ſoil of the mountain is looſe, and on the ſandy parts it is impoſſible to take a firm ſtep; ſo that our traveller encountered great difficulties in his aſcent and deſcent of this mountain; being often obliged, in order to avoid the ſand, to betake himſelf to places where great rocks were heaped on one another, under which he paſſed as through caverns, or to places full of ſtones, where he was forced to leap from one ſtone to another. If we may believe Struys, a Dutch writer, however, all theſe difficulties may be ſurmounted. He aſſures us, he went five days journey up Mount Ararat, to ſee a Romiſh hermit: that he paſſed through three regions of clouds; the firſt dark and thick, the next cold and full of ſnow, and the third colder ſtill; that he advanced five miles every day; and when he came to the place where the hermit had his cell, he breathed a very ſerene and temperate air; that the hermit told him, that he perceived neither wind nor rain all the 25 years he had dwelt there; and that on the top of the mountain there reigned a ſtill greater tranquillity, whereby the ark was preſerved uncorrupted. He farther pretends, that the hermit gave him a croſs made out of the wood of the ark, together with a certificate; a formal copy of which the author has given in his ſham relation.

ARASSI, a maritime, populous, and trading town of Italy, in the territory of Genoa. E. Long. 7. 20. N. Lat. 44. 3.

ARATEIA, in antiquity, a yearly feſtival celebrated at Sicyon, on the birth day of Aratus, wherein divers honours were paid by a prieſt conſecrated to this ſervice, who for diſtinction's ſake wore a ribband beſpangled with white and purple ſpots. The Arateia were ſolemnized with much pomp of muſic, the choriſters of Bacchus attending.

ARATUS, general of the Achæans, conquered Nicocles tyrant of Sicyon. Two years after he ſurpriſed the caſtle called *Acrocorinthus*, and drove out the king of Macedonia: he delivered Argos from its tyrants, and was poiſoned by Philip II. king of Macedonia, whom he had newly reſtored. He was about 62 when he died, the ſecond year of the 141ſt Olympiad. He was interred at Sicyon, and received the greateſt honours from his countrymen. His ſon, who had alſo been prætor, was poiſoned by King Philip. Polybius gives us ſo great a character of Aratus the father's Commentaries or Hiſtory, that the loſs of ſo valuable a work is highly to be regretted.

Aratus || Araxes.

ARATUS, a Greek poet, born at Soli, or Solæ, a town in Cilicia, which afterwards changed its name, and was called *Pompeiopolis*, in honour of Pompey the Great. He flouriſhed about the 124th, or according to ſome, the 126th Olympiad, in the reign of Ptolemy Philadelphus king of Egypt. He diſcovered in his youth a remarkable poignancy of wit, and capacity for improvement; and having received his education under Dionyſius Heracleotes, a Stoic philoſopher, he eſpouſed the principles of that ſect. Aratus was phyſician to Antigonus Gonatus, the ſon of Demetrius Poliorcetes, king of Macedon: this prince, being a great encourager of learned men, ſent for him to court, admitted him to his intimacy, and encouraged him in his ſtudies. The *Phænomena* of Aratus, which is ſtill extant, gives him a title to the character of an aſtronomer as well as a poet; in this piece he deſcribes the nature and motion of the ſtars, and ſhows the particular influences of the heavenly bodies, with their various diſpoſitions and relations. He wrote this poem in Greek verſe: it was tranſlated into Latin by Cicero; who tells us, in his firſt book *De Oratore*, that the verſes of Aratus are very noble. This piece was tranſlated by others as well as Cicero; there being a tranſlation by Germanicus Cæſar, and another into elegant verſe by Feſtus Avienus. An edition of the *Phænomena* was publiſhed by Grotius, at Leyden, in quarto, 1600, in Greek and Latin, with the fragments of Cicero's verſion, and the tranſlations of Germanicus and Avienus; all which the editor has illuſtrated with curious notes. He was certainly much eſteemed by the ancients, ſince we find ſo great a number of ſcholiaſts and commentators upon him. There are ſeveral other works alſo aſcribed to Aratus. Suidas mentions the following: Hymns to Pan; Aſtrology and Aſtrotheſy; a compoſition of Antidotes; an Επιθυτικον on Theopropus; an Ηθοποια on Antigonus; an Epigram on Phila, the daughter of Antipater, and wife of Antigonus; an Epicedium of Cleombrotus; a Correction of the Odyſſey; and ſome Epiſtles in proſe. Virgil, in his Georgics, has imitated or tranſlated many paſſages from this author; and St Paul has quoted a paſſage of Aratus. It is in his ſpeech to the Athenians (Acts xvii. 28.) wherein he tells them, that ſome of their own poets have ſaid, Του γαρ και γενος εσμεν: "For we are alſo his offſpring." Theſe words are the beginning of the fifth line of the *Phænomena* of Aratus.

ARAVA, a fortreſs of Upper Hungary, in a county and on a river of the ſame name. E. Long. 20. 0. N. Lat. 47. 20.

ARAUCO, a fortreſs and town of Chili, in South America; ſituated in a fine valley, on a river of the ſame name. The bravery of the natives drove the Spaniards out of their country even without fire arms. W. Long. 51. 20. S. Lat. 42. 30.

ARAUSIO, or *Civitas Arauſienſis*, or *Arauſicorum* (Notitiæ); *Colonia Secundanorum* (Mela, Pliny, Coins); ſo called, becauſe the veterans of the ſecond legion were there ſettled: The capital of the Cavares, in Gallia Narbonenſis. Now *Orange*, in the weſt of Provence, on an arm of the rivulet Egue, which ſoon after falls into the Rhone, from which it is diſtant a league to the eaſt, at the foot of a mountain. Here is an ancient amphitheatre to be ſtill ſeen. E. Long. 4. 46. N. Lat. 44. 10.

ARAW, a town of Swifferland, in Argow, ſeated on the river Aar. It is handſome, large, and remarkable for its church, its fountain, and the fertility of the ſoil. E. Long. 18. 0. N. Lat. 47. 25.

ARAXES, now the Aras, a river of Armenia Major, which takes its riſe in a mountain called *Ablos*, where the Euphrates alſo hath its origin. From this mountain it runs eaſtward with a ſerpentine courſe, diſcharging itſelf into the Caſpian ſea, after a run of upwards of 500 miles, during which it receives ſome conſiderable

Arba. siderable rivers. Some have imagined that it hath its rife in Mount Ararat; but Tournefort aſſures us that it comes no nearer that mountain than 12 miles. The Araxes is a very rapid river, and is ſuppoſed to be the Gihon mentioned by Moſes. Beſides this extreme rapidity, it is very apt to overflow after rains; ſo that they have in vain endeavoured to build bridges over it; though ſome of them appear, from the few arches remaining, to have been built of the beſt materials, and in the ſtrongeſt manner. Such is the vehemence of its current after the thawing of the adjacent ſnows, or ſome fierce rains, that neither banks nor dikes can reſiſt it; ſo that nothing can be more terrible than the noiſe and violence of its waves at ſuch times: but in winter, when its waters are low, it is fordable in ſome places on camels.

ARBA, in *Ancient Geography*, an iſland and city of Illyria, now *Arbe*, in the gulf of Quarnaro. Of this iſland, which has been but ſlightly noticed by geographers, we have the following deſcription by the Abbe Fortis.

In the Roman times, it is probable that there were no other cities in Arbe but that which bears the name of the iſland, in the neighbourhood of which ancient monuments are frequently dug up.

This city of Arbe, though the capital of a ſmall iſland, not above thirty miles round, wholly uncultivated, and uninhabitable in the higheſt part that faces the channel of Morlacca, has always maintained itſelf with decorum. That it was inhabited by civilized people in the Roman times, is evident, by the inſcriptions that have been frequently diſcovered there, and others ſtill remaining at Arbe. In the lower times it ſuffered all the calamities to which the neighbouring countries were ſubjected, but it always recovered itſelf with honour even after diſſolution.

The archives of the community of Arbe contain ſome ancient papers that are truly valuable, and they are kept with great jealouſy; by them it appears, that, in the eleventh century, gold and ſilk were not rare among the inhabitants. Arbe was ſubject to the kings of Hungary; afterwards it became dependent on Venetian feudatories; and at laſt was taken under the immediate dominion of the moſt ſerene republic, by which a governor is appointed who has the title of count and captain. The number of people on the iſland does not much exceed three thouſand ſouls, diſtributed in a few pariſhes, which might be officiated by a ſmall number of prieſts: Yet, through a monſtrous inconſiſtency that falls very heavy on the poor inhabitants, they have to maintain no leſs than three convents of friars, and as many of nuns, beſides the conſiderable charge of near ſixty prieſts, who have a very ſcanty proviſion.

The climate of Arbe is none of the happieſt; the winter ſeaſon is horrid, eſpecially when agitated by the violent northerly winds, which ſometimes transform the intermediate ſeaſons into winter, and cauſe the ſummer itſelf to diſappear. Theſe furious winds do great damage to the iſland, particularly in the winter and ſpring. Two years ago, about twelve thouſand ſheep periſhed in one night, of cold, in the common paſtures of the mountain; where, according to the cuſtom over all Dalmatia, they are left in the open air the whole year round. The ſalt fog raiſed by the dreadful commotion of the waves, which often roar, between the mountains of Arbe and the oppoſite [illegible], in the narrow channel of Maltempo, conſumes all the buds of the plants and corn, it happens to be driven upon the iſland by the wind; and it is followed by a cruel ſcarcity of every kind of product. Salt [illegible] lumpy communicates its baneful influence even to the fleſh of the animals left on the paſtures, that becomes ill taſted, in conſequence of the bitterneſs and bad nouriſhment of the food. Abſtracting from theſe irregularities, the air of Arbe is healthful; nor ought the conſtant ſummer fevers among the inhabitants to be attributed to its influence, as they are, more probably, derived from unwholeſome food, and a way of life differing little from that of the Hottentots. Arbe.

The appearance of the iſland is exceedingly pleaſant. On the eaſt it has a very high mountain, of the ſame ſubſtance as the Morlacca, of which it was once a part. At the foot of this mountain, the reſt of the iſland is extended to the weſtward, and divided into beautiful and fruitful plains interſperſed with little hills fit to bear the richeſt products. At the extremity that looks to the north, a delightful promontory, called Loparo, ſtretches into the ſea; it is crowned with little hills, which almoſt quite encloſe a fine cultivated plain. Near this promontory are the two ſmall iſlands of S. Gregorio and Goli, very uſeful to ſhepherds and fiſhers. The coaſt of Arbe, that faces the Morlacca mountains, is quite ſteep and inacceſſible; and the channel between them is extremely dangerous, being expoſed to furious winds, and without a ſingle port on either ſide. The long and narrow iſland of Dolin, lying parallel to the iſland of Arbe, along the coaſt of Barbado, forms a channel leſs dangerous, though by no means ſo ſecure as it is beautiful to look at. There are ſeveral harbours in the neighbourhood of the city of Arbe, by which the trade of the beſt part of the iſland is facilitated.

The city ſtands on a riſing ground between two harbours, which form a peninſula; it contains about a thouſand inhabitants, among whom are many noble families, but few of them are rich. Among the moſt remarkable curioſities of the iſland, the Arbegiani are proud of many egregious relicks, and particularly of the head of S. Criſtofano their protector; but the lovers of ſacred antiquity will find ſomething much more ſingular in the three heads of Shadrach, Meſhech, and Abednego, which are venerated there with great devotion. Four of the principal gentlemen are keepers of the ſanctuary, and to their care the precious records of the city are alſo committed. Among theſe records there is a tranſaction of 1018, by which the city of Arbe promiſes to the doge of Venice, Ottone Orfeolo, a tribute of ſome pounds *de ſerta ſerica*, "of wrought ſilk," and in caſe of contravention, pounds *de auro obrizo*, "of pure gold."

In the laſt age there was a learned biſhop of Arbe named Ottavio Spaderi, who would not permit the relicks of S. Chriſtofano to be expoſed to the public veneration, on the ſolemnity of the ſaint's day, becauſe he doubted of their authenticity. The mob roſe, and was going to throw him down from the top of the hill on which the cathedral ſtands; nor did the tumult ceaſe after the day was paſt. The government ſent an armed veſſel to deliver the prelate from the danger he

Arba, Arbaces.

he was in; and the Pope thought proper to give him a more tractable ſpouſe in Italy.

The nature of the ſoil of Arbe, is not the ſame in every ſituation; nay it would be difficult to find a country where there is ſo great a variety in ſo little ſpace. There is a very great difference between the ground of the extremity of the mountain above the channel of Barbado, and the ſides of it on the one part towards the iſland, and on the other facing the ridge of Morlacca. Nor is the top of the mountain itſelf always of the ſame ſtructure: for in ſome parts it is extended in a fine level plain, partly woody and partly cultivable; in other places it is quite rocky, and compoſed of bare marble. The ground at the foot of the mountain, where it ſtretches towards the ſhore, oppoſite to Jablanaz, is nothing but marble; and in the diſtrict of Barbado it is gravelly, and a good ſoil for vines. The wine of Barbado is of excellent quality, and in great eſtimation; hardly any other product is cultivated along that coaſt, as the vines ſucceed ſo well, notwithſtanding the negligent culture. Below the pretended ruins of Colento the land bears vines, olives, mulberry, and other fruit trees, and alſo corn in the loweſt parts. All the lower part of the iſland is compoſed alternately of little hills and valleys, and of a ſubſtance for the moſt part very different from that of the mountain and its adjacencies. As the organization of the mountain is wholly of marble, ſo that of the hills is generally arenaceous. The whetſtone forms a large part, and frequently contains *oſtracites* and *lenticulares*; the exterior ſtratum is commonly friable. The valleys, which according to appearances ſhould be full of ſand, are provided with an excellent ſoil, with ſuch a mixture of very minute ſand as is requiſite to keep it light. Springs of freſh water are by nature well diſtributed over the iſland, and maintain a proper humidity when the ſummer is not exceſſively dry; ſo that the dark verdure of the hills covered with wood, the luxuriance of the vines, and freſhneſs of the corn ground, form a ſpectacle extremely cheerful and agreeable.

The iſland of Arbe would have every thing requiſite for the ſubſiſtence of its ſmall population, if the land was cultivated by a people leſs ſtupid and lazy. It produces, however, firewood, of which many cargoes are annually ſent to Venice; corn, oil, excellent wine, brandy, and ſilk, ſince very ancient times; it alſo exports hides, wool, ſheep, hogs, and horſes of a good breed. There is alſo abundance of good ſalt made on the iſland; and the fiſhing of tunny and mackarel, notwithſtanding it is managed in a ſlovenly and awkward manner, makes no inconſiderable article of trade to the Arbegiani, who, like all their neighbours, find their account in ſelling this commodity to ſtrangers rather than to the Venetians. Yet, with all theſe natural products, the iſland is very far from being rich, or even in a tolerably flouriſhing ſtate; becauſe there is much land left uncultivated, and the peaſants are lazy.

ARBACES governed Media under Sardanapalus. Seeing him ſpinning among a company of his women, he ſtirred up his people to revolt, and dethroned Sardanapalus; who thereupon burnt himſelf in his palace, Arbaces being crowned, began the monarchy of the Medes, which laſted 317 years under nine kings, till Aſtyages was expelled by Cyrus. Arbaces reigned 22 years, and died A. M. 3206. See MEDIA.

ARBALEST, or CROSS BOW. See *Cross-Bow*.

Arbaleſt, Arbela.

ARBELA, now IRBIL, a city of Aſſyria, lying in E. Long. 44. 5. N. Lat. 35. 15. It is famous for the laſt and deciſive battle fought in its neighbourhood between Alexander the Great and Darius Codomannus. This battle was fought 331 years before Chriſt, and the event of it determined the fate of the Perſian empire. Arrian relates, that Darius's army conſiſted of a million of foot and 40,000 horſe; according to Diodorus, there were 200,000 horſe and 800,000 foot; Plutarch relates, that the horſe and foot together made up a million; and Juſtin gives us exactly half Diodorus's number. The Macedonian army, according to Arrian, conſiſted of 40,000 foot and 7000 horſe.

Upon receiving notice of the vaſt ſtrength of the enemy, Alexander expreſſed neither ſurpriſe nor apprehenſion; but having "commanded a halt, he encamped four days, to give his men reſt and refreſhment. His camp being fortified by a good intrenchment, he left in it the ſick and infirm, together with all the baggage; and, on the evening of the fourth day, prepared to march againſt the enemy with the effective part of his army, which was ſaid to conſiſt of 40,000 infantry and 7000 horſe, unencumbered with any thing but their proviſions and armour. The march was undertaken at the ſecond watch of the night, that the Macedonians, by joining battle in the morning, might enjoy the important advantage of having an entire day before them, to reap the full fruits of their expected victory. About half way between the hoſtile camps, ſome eminences intercepted the view of either army. Having aſcended the riſing ground, Alexander firſt beheld the barbarians, drawn up in battle array, and perhaps more ſkilfully marſhalled than he had reaſon to apprehend. Their appearance, at leaſt, immediately determined him to change his firſt reſolution. He again commanded a halt, ſummoned a council of war; and different meaſures being propoſed, acceded to the ſingle opinion of Parmenio, who adviſed that the foot ſhould remain ſtationary until a detachment of horſe had explored the field of battle and carefully examined the diſpoſition of the enemy. Alexander, whoſe conduct was equalled by his courage, and both ſurpaſſed by his activity, performed thoſe important duties in perſon at the head of his light horſe and royal cohort. Having returned with unexampled celerity, he again aſſembled his captains, and encouraged them by a ſhort ſpeech. Their ardour correſponded with his own; and the ſoldiers, confident of victory, were commanded to take reſt and refreſhment." *Gillies' Hiſt. of Greece.*

"Meanwhile Darius, perceiving the enemy's approach, kept his men prepared for action. Notwithſtanding the great length of the plain, he was obliged to contract his front, and form in two lines, each of which was extremely deep. According to the Perſian cuſtom, the king occupied the centre of the firſt line, ſurrounded by the princes of the blood and the great officers of his court, and defended by his horſe and foot guards, amounting to 15,000 choſen men. Theſe ſplendid troops, who ſeemed fitter for parade than battle, were flanked on either ſide by the Greek mercenaries and other warlike battalions, careſully ſelected from the whole army. The right wing conſiſted of the Medes, Parthians, Hyrcanians and Sacæ; the left was chiefly occupied by the Bactrians, Perſians, and Carduſians.

Arbela. dusians. The various nations composing this immense host were differently armed, with swords, spears, clubs, and hatchets: while the horse and foot of each division were promiscuously blended, rather from the result of accident than by the direction of design. The armed chariots fronted the first line, whose centre was farther defended by the elephants. Chosen squadrons of Scythian, Bactrian, and Cappadocian cavalry advanced before either wing, prepared to bring on the action, or after it began to attack the enemy in flank and rear. The unexpected approach of Alexander within sight of his tents prevented Darius from fortifying the wide extent of his camp; and, as he dreaded a nocturnal assault from enemies who often veiled their designs in darkness, he commanded his men to remain all night under arms. This unusual measure, the gloomy silence, the long and anxious expectation, together with the fatigue of a restless night, discouraged the whole army, but inspired double terror into those who had witnessed the miserable disasters on the banks of the Granicus and the Issus.

"At daybreak Alexander disposed his troops in a manner suggested by the superior numbers and deep order of the enemy. His main body consisted of two heavy-armed phalanxes, each amounting to above 16,000 men. Of these the greater part formed into one line; behind which he placed the heavy-armed men, reinforced by his targeteers, with orders, that when the outspreading wings of the enemy prepared to attack the flanks and rear of his first line, the second should immediately wheel to receive them. The cavalry and light infantry were so disposed on the wings, that while one part resisted the shock of the Persians in front, another, by only facing to the right or left, might take them in flank. Skilful archers and darters were posted at proper intervals, as affording the best defence against the armed chariots, which (as Alexander well knew) must immediately become useless whenever their conductors or horses were wounded.

"Having thus arranged the several parts, Alexander with equal judgment led the whole in an oblique direction towards the enemy's left; a manœuvre which enabled the Macedonians to avoid contending at once with superior numbers. When his advanced battalions, notwithstanding their nearness to the enemy, still stretched towards the right, Darius also extended his left, till, fearing that by continuing this movement, his men should be drawn gradually off the plain, he commanded the Scythian squadrons to advance, and prevent the farther extension of the hostile line. Alexander immediately detached a body of horse to oppose them. An equestrian combat ensued, in which both parties were reinforced, and the barbarians finally repelled. The armed chariots then issued forth with impetuous violence; but their appearance only was formidable; for the precautions taken by Alexander rendered their assault harmless. Darius next moved his main body, but with so little order, that the horse, mixed with the infantry, advanced, and left a vacuity in the line, which his generals wanted time or vigilance to supply. Alexander seized the decisive moment, and penetrated into the void with a wedge of squadrons. He was followed by the nearest sections of the phalanx, who rushed forward with loud shouts, as if they had already pursued the enemy. In this part of the field, the victory was not long doubtful: after a feeble resistance, the barbarians gave way; and the pusillanimous Darius was foremost in the flight.

Arberg Arbitrary

"The battle, however, was not yet decided. The more remote divisions of the phalanx, upon receiving intelligence that the left wing, commanded by Parmenio, was in danger, had not immediately followed Alexander. A vacant space was thus left in the Macedonian line, through which some squadrons of Persian and Indian horse penetrated with celerity, and advanced to the hostile camp. It was then that Alexander derived signal and well-earned advantages from his judicious order of battle. The heavy-armed troops and targeteers, which he had skilfully posted behind the phalanx, speedily faced about, advanced with a rapid step, and attacked the barbarian cavalry, already entangled among the baggage. The enemy, thus surprised, were destroyed or put to flight. Meanwhile, the danger of his left wing recalled Alexander from the pursuit of Darius. In advancing against the enemy's right, he was met by the Parthian, Indian, and Persian horse, who maintained a sharp conflict. Sixty of the *Companions* fell; Hephæstion, Cœnus, and Menidas, were wounded. Having at length dissipated this cloud of cavalry, Alexander prepared to attack the foot in that wing. But the business was already effected, chiefly by the Thessalian horse; and nothing remained to be done, but to pursue the fugitives, and to render the victory as decisive as possible.

"According to the least extravagant accounts, with the loss of 500 men, he destroyed 40,000 of the barbarians, who never thenceforth assembled in sufficient numbers to dispute his dominion in the east. The invaluable provinces of Babylonia, Susiana, and Persis, with their respective capitals of Babylon, Susa, and Persepolis, formed the prize of his skill and valour. The gold and silver found in those cities amounted to thirty millions sterling; the jewels and other precious spoil, belonging to Darius, sufficed, according to Plutarch, to load 20,000 mules, and 5000 camels." The consequences of this victory the reader will find narrated under the article PERSIA.

ARBERG, a town of Switzerland, in the canton of Bern, with a handsome castle, where the bailiff resides. It is seated on the river Aar, in a kind of island. E. Long. 17. 15. N. Lat. 47 0.

ARBITER, in the *Civil Law*, implies a judge nominated by the magistrate, or chosen voluntarily by the two contending parties, in order to decide their differences.

The civilians make a difference between *arbiter* and *arbitrator*, though both found their power on the compromise of the parties; the former being obliged to judge according to the customs of the law, whereas the latter is at liberty to use his own discretion, and accommodate the difference in the manner that appears to him most just and equitable.

ARBITRARY, that which is left to the choice or arbitration of men, or not fixed by any positive law or injunction.

Arbitrary Punishment, in *Law*, denotes, such punishments as are by statute left to the discretion of the judge. It is a general rule in arbitrary punishments, that the judge cannot inflict death. Hence all punishments that are not capital have acquired the name of

Arbitration || Arburg.

arbitrary punifhments, even although they be expreſsly pointed out by ſtatute.

ARBITRATION, is where the parties, injuring and injured, ſubmit all matters in diſpute, concerning any perſonal chattels or perſonal wrong, to the judgement of two or more arbiters or arbitrators; who are to decide the controverſy: and, if they do not agree, it is uſual to add, that another perſon be called in as umpire, *imperator* or *impar*), to whoſe ſole judgment it is then referred; or frequently there is only one arbitrator originally appointed. This deciſion, in any of theſe caſes, is called an *award*. And thereby the queſtion is as fully determined, and the right transferred or ſettled, as it would have been by the agreement of the parties or the judgment of a court of juſtice. See LAW.

ARBITRATOR, a private extraordinary judge, choſen by the mutual conſent of parties, to determine controverſies between them. See ARBITER and ARBITRATION.

ARBOIS, a ſmall populous town of France, in the department of Jura, formerly Franche Compte, famous for its wines. E. Long. 5. 40. N. Lat. 46. 55.

ARBON, an ancient town in Swiſſerland, on the ſouth banks of the lake Conſtance, in Thurgaw. It has a caſtle built by the Romans, and is under the juriſdiction of the biſhop of Conſtance. In the time of war, the Swiſs have a right to put in a garriſon. The Popiſh and Proteſtant religions are equally tolerated in this town. E. Long. 9. 30. N. Lat. 4. 38.

ARBOR, in *Botany*, a tree. Trees are by Linnæus claſſed in the ſeventh family of the vegetable kingdom, and are diſtinguiſhed from ſhrubs in that their ſtems come up with buds on them; but this diſtinction holds not univerſally, there being rarely any buds on the large trees in India.

ARBOR, in *Mechanics*, the principal part of a machine, which ſerves to ſuſtain the reſt; alſo the axis or ſpindle on which a machine turns, as the *arbor* of a crane, windmill, &c.

ARBOR Dianæ. See CHEMISTRY *Index*.

ARBOR Vitæ. See THUYA, BOTANY *Index*.

ARBORESCENT, an epithet applied to ſuch objects as reſemble trees.

ARBORIST, a perſon ſkilled in that part of botany which treats of trees.

ARBORESCENT Star-fiſh, in *Zoology*, a ſpecies of aſterias. See ASTERIAS.

ARBORIBONSES, in modern hiſtory, prieſts of Japan, who live an erratic life, and ſubſiſt on alms. They dwell in caverns, and cover their heads with bonnets made of the bark of trees.

ARBOUR, in *Gardening*, a kind of ſhady bower, formerly in great eſteem; but of late rejected on account of its being damp and unwholeſome.

Arbours are generally made of lattice work, either of wood or iron; and covered with elms, limes, hornbeams; or with creepers, as honeyſuckles, jaſmines, or paſſion flowers; either of which will anſwer the purpoſe very well, if rightly managed.

ARBROATH. See ABERBROTHICK.

ARBURG, a town of Swiſſerland, in the canton of Bern, on the river Aar. It is ſmall, but very ſtrong, being ſeated on a rock, and defended by a good fortreſs cut out of the rock. E. Long. 17. 55. N. Lat. 47. 10.

Arbuſcula || Arbuthnot.

ARBUSCULA is uſed by Bradley to denote a little or dwarf tree, above the rank of ſhrubs, but below that of trees; ſuch, e. g. as the elder.

ARBUSTUM implies a number or multitude of trees planted for the fruit's ſake.

The word was more peculiarly applied to a place planted with trees for faſtening vines to, which are hence called by Columella *arbuſtivæ*.

ARBUSTUM is ſometimes alſo uſed to denote an orchard, or field wherein trees are planted at ſuch diſtance that there is room for ploughing and growing corn between.

ARBUTHNOT, ALEXANDER, principal of the univerſity of Aberdeen in the reign of James VI. of Scotland, was born in the year 1538. He ſtudied firſt at Aberdeen; and was afterwards ſent over to France, where, under the famous Cujacius, he applied himſelf to the ſtudy of the civil law. In the year 1563, he returned to Scotland, and took orders. Whether he was ordained by a biſhop or by preſbyters, is a matter of uncertainty. In 1568, he was appointed miniſter of Arbuthnot and Logie Buchan; and in the following year, Mr Alexander Anderſon being deprived, our author was made principal of the king's college at Aberdeen, in his room. In the general aſſembly which met at Edinburgh in the years 1573 and 1577, he was choſen moderator; and to the end of his life was an active ſupporter of the reformed religion. He died in 1583, in the 45th year of his age; and was buried in the College church of Aberdeen. We are told in the Biographia, that he was eminent as a poet, a philoſopher, a mathematician, a lawyer, a divine, and a phyſician. He wrote *Orationes de origine et dignitate juris*, printed at Edinburgh, 1572, 4to. His cotemporary Thomas Maitland wrote a copy of Latin verſes on the publication of this book: they are printed in the *Delic. Poetar. Scot.* He publiſhed Buchanan's Hiſtory of Scotland in the year 1582.

ARBUTHNOT, *John*, M. D. the ſon of an Epiſcopal clergyman in Scotland, was born ſoon after the Reſtoration at Arbuthnot near Montroſe. After acquiring a competent knowledge of the elementary parts of education, he was ſent to the college of Aberdeen, where the buddings of thoſe great qualities and thoſe ſallies of wit, which contributed ſo much to his future greatneſs, ſoon made their appearance. Having there gone through a courſe of academical ſtudies, and obtained the degree of doctor of phyſic, he went to London, in order to reap the fruits both of his natural and acquired abilities. He then began to diſplay his talents, in teaching mathematics, in which he was very expert. "An Examination of Dr Woodward's Account of the Deluge," &c. in 1697, firſt made him known to the learned word. This performance was received with great applauſe; and in 1700 a treatiſe "On the Uſefulneſs of Mathematical Learning" ſtill increaſed his reputation. A very intereſting paper "On the Regularity of the Births of both Sexes," demonſtrating from authentic proofs the univerſal ſimilarity which is obſerved by nature in this circumſtance, and drawing from theſe ſeveral political and moral inferences, which he preſented to the Royal Society,

Arbuthnot. ciety, procured his election in 1704 into that body. Meanwhile, in his own proper profeſſion, he was acquiring conſiderable eminence, and was appointed on account of his great medical knowledge, phyſician extraordinary to Prince George of Denmark, and ſhortly afterwards one of the phyſicians in ordinary to Queen Anne. He was admitted in 1710 a fellow of the college. He formed about this period a very intimate acquaintance, which laſted with unabating tenderneſs and affection during the reſt of his life, with theſe great literary men, Pope, Gay, and Swift. In 1714 he engaged in an extenſive deſign, of making a ſatire upon all the abuſes of ſcience in every branch, in cooperation with Pope and Swift, which was to be written under the form of the hiſtory of a fictitious character, and in the grave ironical ſtyle. The plan was never finiſhed, but the "Memoirs of Martinus Scribleruſ," publiſhed in Pope's works, form a part; of which, much is the performance of Dr Arbuthnot. It is very probable, that the whole of the firſt book is of his compoſition, in which the great profoundneſs of knowledge that is diſcerned, and the good-natured pleaſantry with which the ſatire is directed, has gained it the character of one of the moſt original, learned, and intereſting pieces in the Engliſh language. Thoſe parts which relate to anatomy, the manners and cuſtoms of antiquity, and logic, are particularly his performance. On the death of Queen Anne, he made a viſit to Paris, in order to drive away the melancholy which attended him on account of that circumſtance, which was a ſevere ſtroke to him, and deſtructive not only to his perſonal, but alſo to his political views. Returning from thence, as his medical ſervices were no longer required at St James's, he retired from it, and followed at large the practice of his profeſſion; yet he did not thence give up his literary purſuits, but purſued them with great ardour, although long intervals take place between the times of his publications. A work entitled "Tables of Ancient Coins, Weights, and Meaſures," explained and exemplified in ſeveral diſſertations, in a 4to vol. appeared in 1727, which is the chief of his ſerious performances. Although there are ſeveral inaccuracies in it which could hardly be avoided in ſo intricate a ſubject, it is a work of great merit, and has ever ſince been conſidered as the ſtandard authority. A treatiſe "On the Nature and Choice of Aliments," which was publiſhed in 1732, and another publiſhed in 1733, "On the Effects of Air on Human Bodies," finiſh the liſt of his ſterling works. Both theſe were well received by the faculty, and continue to be ſtill eſteemed, and are occaſionally read and quoted. Reſpecting his humorous works, which were the productions of his leiſure hours, they are ſo confounded with thoſe of his contemporaries, that it is not eaſy to diſtinguiſh them. But a piece which, independent of any other, would raiſe him to the character of the firſt humorous writer in the Engliſh language, entitled the "Hiſtory of John Bull," is confidently aſcribed to him. This is conducted with great wit and humour, and all the circumſtances and characters are moſt admirably adapted. Among his ſeveral avowed ironical pieces are "A Treatiſe concerning the Altercation or Scolding of the Ancients", and the "Art of political Lying."

In the year 1751, there was publiſhed two ſmall volumes, entitled "The Miſcellaneous Works of Dr Arbuthnot;" but the greateſt part of what they contain is denied by his ſon to be of his compoſition. As it was cuſtomary for him, when any comical occurrence took place, which ſtruck his fancy, to write concerning it in a large folio which lay in his parlour; it is very probable, that many light and imperfect eſſays, which had gone out of his remembrance, might get abroad into the world. Through all his pieces of this kind there runs a vein of good-natured pleaſantry; and this tends to confirm the character given of him by Swift, to a lady who deſired to know his opinion concerning Dr Arbuthnot, "He has more wit than we all have, and his humanity is equal to his wit." Although his writings are free from that gall and rancour, too common among party writers, yet they cannot be ſaid to be altogether free from a party ſpirit. He, however, cannot be excuſed in one inſtance, of allowing his perſonal diſlike to overrule his humanity, viz. in the "Memorandums of the ſix days preceding the death of a late Right Reverend" (meaning Biſhop Burnet). The indignation of a virtuous man towards an infamous character, is ſufficient to juſtify his ſeverity in his bitter "Epitaph on Colonel Chartres;" and this ſeverity was probably aggravated by party ſpirit. Although he had no proper poetical talent, yet he made an effort to try his genius in that kind of compoſition. A piece, publiſhed in Dodſley's collection, is valuable for its philoſophical ſentiment, which is entitled ΓΝΩΘΙ ΣΕΑΥΤΟΝ, *Know thyſelf*. He was alſo ſkilled in muſic; and Sir J. Hawkins mentions an anthem and a burleſque ſong, which are aſcribed to him.

In theſe occupations he paſſed his days, amid all the pleaſures that can render domeſtic life happy, in the affection and eſtimation of his friends, beloved and eſteemed by all his literary aſſociates, who have each taken great pains to celebrate their mutual friendſhip. Swift in one of his poems ſincerely laments that he is

> "Far from his kind Arbuthnot's aid,
> Who knows his art, but not his trade."

Pope has dedicated to him an epiſtle, called a "Prologue to the Satires." He was full of humility and reſignation in all the diſpenſations of Providence. Of his two ſons, he witneſſed the death of one; and the other, with ſome daughters, ſurvived him. At length, from an inveterate aſthma, he fell into a dropſical diſorder; and, in order to try the effect of a change of air, he repaired to Hampſtead, but without the leaſt gleam of hope reſpecting a recovery, as he aſſured his friends Pope and Swift. Returning to his houſe in London, he died February 27. 1734-5. His lateſt letters diſplay a great ſerenity of mind, an exemplary piety, a contempt of vice, and a glowing deſire of virtue. (*Gen. Biog.*)

ARBUTUS, the STRAWBERRY TREE. See BOTANY *Index*.

ARC, JOAN OF, generally called the *Maid of Orleans*, one of the moſt famed heroines in the annals of hiſtory, was born about the beginning of the 15th century at Domremy, near Vaucouleurs in Lorrain, where her father, a peaſant, named James d'Arc, reſided. When ſhe was able in the leaſt degree to earn a ſuſtenance for herſelf, her parents, who were but poor, put her to ſervice at a ſmall inn, where ſhe performed

Arc. formed ſeveral offices, more properly belonging to the other ſex, ſuch as riding the horſes to water without a ſaddle, and attending them in the fields, and many other ſimilar ſervices, which greatly diſplayed her maſculine habit of body. At the time when Charles VII. was reduced to a very low condition, and the greateſt part of his country had been overrun by the Engliſh, Joan, probably then at the age of 27 or 28, imagined that ſhe ſaw ſeveral viſions, and that in one of theſe ſhe was commanded by St Michael, to go immediately to the relief of Orleans, at that time cloſely beſieged by the Engliſh army, and then to procure the conſecration of the king at Rheims. In February 1429, her parents took her to the governor of Vaucouleurs, named Baudricourt, who at firſt held her pretended inſpiration to be no more than an idle tale, and treated it with the contempt ſuch a thing would have deſerved; but at laſt induced by her entreaties, he ſent her to Chinon, where the king then was, in order that ſhe might be introduced to him. Charles, whether it proceeded from earneſt or not, in order to ſound her, determined to preſent her to a company of his nobles, where no mark of dignity tended to diſtinguiſh him from them; and, it is aſſerted, that ſhe immediately recognized him, and informed him of ſecrets which he had endeavoured to conceal from every perſon. She boldly engaged to acompliſh the two objects of her miſſion, and required that they ſhould arm her with a conſecrated ſword, which lay in the church of St Catharine of Fierbois; and although ſhe had never ſeen it, ſhe accurately deſcribed every particular concerning it. The manner in which ſhe acted inſpired many with confidence; and certain doctors of the church were appointed to inſpect into the nature of her inſpiration, and matrons to give proofs of her virginity. The report which they gave was very favourable; but being next put into the hands of the parliament, they treated her as frantick, and demanded that ſhe ſhould ſhew them a miracle. She anſwered, that although ſhe had not any at that time to preſent, ſhe would ſoon accompliſh one at Orleans. At length being fully armed and mounted, ſhe was ſent to Orleans along with the army deſtined for its relief. By diſplaying a conſecrated banner, ſhe ſoon cleanſed the camp of intemperance; and by her whole deportment, animated the ſoldiers by her exemplary enthuſiaſm. Entering Orleans, ſhe introduced a convoy, and boldly attacking the Engliſh in their forts, ſhe routed them with great ſlaughter, and ſtruck them with ſuch a panic, that they were even obliged to raiſe the ſiege with great precipitation. The dignity of a ſuperior mind and a brave heroiſm reigned through all her actions. Various other ſucceſſes followed in a ſhort time, and the diſmayed Engliſh everywhere fled before the hand of a conquering enemy, whom they had but lately contemned. Joan now thinking it proper to perform her other promiſe of crowning the king at Rheims, proceeded with him through the kingdom, in order to receive ſubmiſſion of the towns as he marched, which he did without any oppoſition. Arriving at Rheims, the keys of the city were delivered to him, and, entering the town, he was anointed and crowned with the holy oil of Clovis, Joan ſtanding by his ſide in full armour, and diſplaying her conſecrated banner. Charles filled with gratitude for her important ſervices, ennobled her family, and conferred upon it the title of *the Sys*, with a conformable eſtate in land. The two objects of her miſſion being now accompliſhed, Joan prepared to retire into the country; but Dunois, the general, being ſenſible of her importance on account of her pretended inſpiration, endeavoured to perſuade her to remain in arms until the Engliſh ſhould be fully driven from the country; which by his perſuaſions he effected. Adviſed by him, ſhe caſt herſelf into Compeigne, then cloſely beſieged by the Engliſh and the duke of Burgundy. Having there made a ſally upon the enemy, ſhe drove them from their entrenchments; but being baſely deſerted by her followers, ſhe was taken priſoner. Upon her capture, the Engliſh enjoyed a malignant gratification, and reſolved to ſhew her no mercy, on account of the change ſhe had occaſioned in their affairs. The duke of Bedford, the regent, having ranſomed her from the captors, appointed a criminal proſecution againſt her upon the charges of employing ſorcery and magic, and of being impious. He was joined in the accuſation by the clergy, and by the univerſity of Paris. She was carried in irons before an eccleſiaſtical commiſſion at Rouen, where ſeveral capricious interrogatories were put to her during a trial of about four months, to which ſhe anſwered with ſteadineſs and gravity. Among ſeveral other queſtions, ſhe was interrogated why ſhe had aſſiſted at the coronation of Charles with her ſtandard in her hand. She boldly replied, "Becauſe the perſon who ſhared in the danger, had a right to ſhare in the glory." Her defence was not ſo ſtrong concerning her pretended inſpiration and viſions, which were the moſt dangerous points of the attack. She appealed to the pope upon being accuſed on theſe grounds of impiety and hereſy; but her appeal was not allowed. At length ſhe was condemned of being a blaſphemer and ſorcereſs, and accordingly delivered over to the power of the civil magiſtrate. A view of the dreadful puniſhment that awaited her, at laſt overpowered her reſolution; and ſhe endeavoured to eſcape it, by making a diſavowal of her pretended revelations, and a full renunciation of her errors. Her ſentence was then changed into perpetual impriſonment, but this puniſhment did not aſſuage the fury of her barbarous enemies. They craftily laid a man's dreſs in her chamber, and ſhe, induced by the ſight of an apparel in which ſhe had gained ſo much honour, put it on; and, upon being diſcovered, her enemies condemned her to the ſtake, interpreting the action into a relapſe of hereſy. She ſuffered her puniſhment in June 1431, at the market-place of Rouen, with great firmneſs; and even the Engliſh themſelves beheld the ſcene with tears. Her death will for ever caſt an indelible ſtigma on the character of her cruel proſecutors. Charles did nothing towards avenging her cauſe; but ten years afterwards, contented himſelf with procuring the reſtoration of her memory by the pope, and a reverſion of the proceſs. She was ſtyled in that act, a "martyr to her religion, her country, and her king." In their enthuſiaſtic admiration, her countrymen were not ſo ſlow in honouring her memory. Many marvellous ſtories were related by them concerning her death. Some ſuppoſed that ſhe was not actually dead, and continually expected, that, as formerly, ſhe would come, and at their head lead them on to victory. A conſiſt-

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Arcade || Arcangis

ent and uniform judgment reſpecting the actions and addreſs of this perſonage cannot be made by poſterity. That ſhe gave herſelf up to the influence of a heated fancy, and that ſhe was confident in the idea of her divine inſpiration, and that this notion was ſo improved by certain favourites of Charles, as to excite the emotions of the public, ſeems to be the moſt probable ſuppoſition. That the appearance of the Maid of Orleans tended to give a deciſive turn to the conteſt between the Engliſh and the French, has never in the leaſt been queſtioned.

The praiſe and exploits of this noble heroine have formed the ſubject of various works both in proſe and verſe. In verſe, that of Voltaire is very licentious and burleſque, and is an injury to her memory; but it has in a great degree been repaired by that moſt ſpirited and ſublime poem of Southey, in Engliſh, which repreſents her in the moſt lively and ſtriking colours of heroiſm and virtue; and by that of Chapelain, although it did not meet with ſuch ſucceſs. (*Gen. Biog.*)

ARCADE, in *Architecture*, is uſed to denote any opening in the wall of a building formed by an arch.

ARCADI, or ARCADIANS, the name of a learned ſociety at Rome. See ACADEMY.

ARCADIA, an inland diſtrict in the heart of Peloponneſus (Strabo). It is mountainous, and fitter for paſture than corn; and therefore chiefly celebrated by bucolic or paſtoral poets, who feign Pan, the god of ſhepherds, to be the guardian of it (Virgil). It has to the north Achaia, to the eaſt Argos and Laconia, Meſſenia to the ſouth, and Elis to the weſt. According to Pliny, the wine of this country cured barrenneſs in women, and inſpired the men with rage; and the berries of the yew gathered there were ſo ſtrong a poiſon, that whoever ſlept or took refreſhment under that tree was ſure to die. In Strabo's time there were few cities remaining in it, moſt of them being deſtroyed in the Grecian wars. Euſtathius ſays, the the country was anciently called *Pelaſgia*, from Pelaſgos, who brought the people, from roots, herbs, and leaves of trees, to feed on acorns, eſpecially beech maſt; as Artemidorus obſerves, that the Arcadians uſually lived on acorns. It was alſo called *Lycaonia*, *Gigantis*, and *Parrhaſia* (Stephanus). The Arcadians are greatly commended for their love of, and ſkill in, muſic (Virgil, Polybius). To imitate the Arcadians, is to labour and toil for the benefit of others, never conquering their own, but the enemies of others (Heſychius). This probably took its riſe from the ancient Arcadians being accuſtomed to hire themſelves out as mercenaries to foreign nations. Homer commends their martial proweſs, their paſtures, their ſheep, and their country well watered. The gentilitious name is *Arcades*; who boaſted of their great antiquity, and that they were older than the ſun and moon (Apollonius Rhodius, Nonnius, Plutarch, Ovid, Statius). They were the firſt who had a year of three months, and therefore called *Proceleni*, becauſe their year was prior to that adjuſted in Greece to the courſe of the moon (Cenſorinus).

ARCANGIS, in the Turkiſh armies, an inferior kind of infantry, which ſerve as *enfans perdus*, and to haraſs and pillage the enemy's frontiers. The Arcangis are an order inferior to the Janizaries; and when any of them diſtinguiſh themſelves, are uſually preferred into the Janizaries order. They have no pay, but are to ſubſiſt on their plunder.

Arcanum || Arch.

ARCANUM, among *Phyſicians*, any remedy, the preparation of which is induſtriouſly concealed, in order to enhance its value.

ARCANUM, in *Ancient Geography*, a villa of Q. Cicero, Tully's brother, in Latium, (Cicero). Now Arce, in the Terra di Lavora, in the kingdom of Naples, on the borders of the Campagna di Roma, on the river Melpis, between Arpinum and Aquinum.

ARCBOUTANT, in *Building*, an arched buttreſs. See BUTTRESS.

ARCESILAUS, a celebrated Greek philoſopher, about 300 years before the Chriſtian era, was born at Pitane, in Eolis. He founded the ſecond academy, which is called the *ſecond ſchool*. He was a man of great erudition, and well verſed in the writings of the ancients. He was remarkable for the ſeverity of his criticiſms; but nevertheleſs he knew how to accommodate himſelf to the age, and purſue the allurements of pleaſure. He had a great number of diſciples. His doctrines were different in ſeveral reſpects from thoſe of the ancient ſchool: and perhaps he was led into this diverſity of opinions by many capital errors in the ancient ſchool, ſuch as the incredible arrogance of the dogmatiſts, who pretended to aſſign cauſes for all things; the myſterious air they had thrown upon the doctrine of ideas; the entirely diſcarding the teſtimony of the ſenſes; the objections of the Pyrrhoniſts, who now began to broach their opinions; the powerful oppoſition of the Stoics and Peripatetics, who diſcovered the feeble parts of the Academic philoſophy. Theſe might have given cauſe to reform the ancient ſchool, and to found a new one. The middle ſchool, therefore, laid it down as a principle, that we could know nothing, nor even aſſure ourſelves of the certainty of this poſition; from whence they inferred, that we ſhould affirm nothing, but always ſuſpend our judgement. They advanced, that a philoſopher was able to diſpute upon every ſubject, and bring conviction with him, even upon contrary ſides of the ſame queſtion; for there are always reaſons of equal force both in the affirmative and negative of every argument. According to this doctrine, neither our ſenſes nor even our reaſon, are to have any credit: and therefore, in common affairs, we are to conform ourſelves to received opinions. Arceſilaus was ſucceeded by his diſciple Lacydes.

ARCH, in *Geometry*, any part of the circumference of a circle or curved line, lying from one point to another, by which the quantity of the whole circle or line, or ſome other thing ſuch after, may be gathered. See RIDGE and CENTER.

ARCH, a concave or hollowed piece of building, conſtructed in ſuch a manner that the ſeveral ſtones of which it is compoſed keep one another in their places. The terms *arch* and *vault* properly differ only in this, that the arch expreſſes a narrower, and the vault a broader, piece of the ſame kind. The principal difference in the form of arches is, that ſome are circular, and others elliptical; the former having a larger or ſmaller part of a circle, the other of an ellipſis. What are called *ſtrait arches*, are thoſe frequently uſed for doors and windows, the upper and under edges of which are ſtrait and parallel, and the ends and joints

Arch
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Archangel.

joints all pointing toward a centre. The ſpace between two piers of a bridge is called an *arch*, becauſe uſually arched over.

Triumphal Arches are magnificent entries into cities, erected to adorn a triumph, and perpetuate the memory of the action. The arches of Titus and Conſtantine make at this time a great figure among the ruins of old Rome.

Arch, in *Compoſition*, ſignifies *chief*, or of the *firſt* claſs; as archangel, archbiſhop, &c.

ARCHÆUS, or Archeus. See Archeus.

ARCHANGEL, an angel occupying the eighth rank in the celeſtial hierarchy. See Angel and Hierarchy.

Archangel, a city of Ruſſia, in the province of Dwina, ſituated on the eaſt ſide of the river Dwina, about ſix miles from the White ſea, in E. Long. 39. N. Lat. 64. 30. The city extends about three miles in length and one in breadth. It is rich, populous, built in the modern taſte, and is a metropolitan ſee. It roſe from a caſtle built on the ſpot by Baſilowitz II. to protect the increaſing trade brought there by the diſcovery of the White ſea by the Engliſh, and took its name from a monaſtery built in honour of the archangel Michael. Before this period the commercial intercourſe between Ruſſia and the northern parts of Europe had been long carried on by the Hanſeatic towns; which uſually ſailed to Revel or Narva, and from thence paſſed through Dorpt to Pleſcof and Novogorod, where their factories were eſtabliſhed. The accidental diſcovery of Archangel, in 1553, deprived the Hanſeatic towns of a great part of this lucrative commerce, and transferred it to the Engliſh. On the 11th of May, in the above-mentioned year, three ſhips ſailed from Deptford, in order to explore the northern ſeas, under the command of Sir Hugh Willoughby. Two of theſe veſſels penetrated as high as the 72d degree of latitude, to the coaſt of Spitzbergen; and being afterwards forced by ſtreſs of weather into the bay of the river Arzina in Ruſſian Lapland, both their crews were frozen to death. Richard Chancellor, who commanded the other ſhip, called the *Bonaventure*, diſcovering the country bordering upon the White ſea, landed near the mouth of the Dwina, in a bay, which he denominated the *Bay of St Nicholas*, from a convent of that name near the preſent port of Archangel. The czar Iwan Baſilowitz, being informed of his arrival, invited him to his court, where he was hoſpitably entertained, and the czar indulged the Engliſh with a free trade in his dominions: in conſequence of this permiſſion, a company of merchants was incorporated in London; and being encouraged by particular privileges from the czar, ſet on foot a conſiderable commerce, to the mutual advantage of both nations. This traffic the Engliſh for ſome time enjoyed without competition. The Dutch, however, and other nations, gradually inſinuated themſelves into this commerce; which they carried on to a very great diſadvantage, as not being favoured with thoſe privileges which the czar had granted to the Engliſh company. Theſe were at laſt ſuddenly annihilated by Alexis Michaelowitch; who in 1648 baniſhed the Engliſh merchants from all his dominions. The cauſe of this expulſion is generally imputed to the reſentment which the czar conceived againſt the Engliſh for the execution of Charles I. with whom he was cloſely connected by leagues of amity and alliance: but in effect he aboliſhed the company's privileges in the year before that event; and his indignation againſt the Engliſh for their rebellion, Mr Coxe affirms, was only a political pretext; the real motive being derived from the offers made by the Dutch to pay duties of export and import to the amount of 15 per cent. if they were indulged with the liberty of carrying on as free a trade as the Engliſh throughout his dominions. For not long afterwards, the czar ſuffered William Prideaux, Cromwell's agent, to reſide at Archangel; and permitted the Engliſh to renew their commerce in that port upon the ſame footing with other foreigners. And upon this footing alone our merchants ever after continued to trade. Archangel, Archbiſhop.

The commodities chiefly imported into Archangel, were gold and ſilver ſtuffs and laces, gold wire, cochineal, indigo, and other drugs for dyeing; wine, brandy, and other diſtilled ſpirits. The cuſtoms ariſing to the czar were computed at 200,000 rubles a-year, and the number of foreign ſhips at 400 annually. But upon the building of Peterſburg, Peter the Great aboliſhed the immunities of Archangel, annd removed the commerce of the White ſea to the havens of the Baltic. Still, however, its exports of tar were conſiderable; in 1730, to the amount of 40,000 laſts, of 11 barrels each. It ſends, during winter, great quantities of the rawaga, a ſmall ſpecies of three-finned cod, to Peterſburg frozen.

In 1752 Elizabeth again reſtored the ancient immunities of Archangel; and its preſent trade is not inconſiderable. It ſupplies the government of Archangel, part of thoſe of Niſhnei-Novogorod and Caſan, with European commodities; and draws in exchange from thoſe parts corn, flax, hemp, coarſe linen, cordage, ſails, maſts and tallow, which are moſtly conveyed by the Dwina: it forms alſo a principal communication with the northern and weſtern parts of Siberia, from whence the merchants procure furs, ſkins, and iron.

The houſes of Archangel are generally of wood, but well contrived; and every chamber is provided with a ſtove, as a fence againſt the cold, which is here exceſſive in the winter. The ſtreets are paved with broken pieces of timber and rubbiſh, diſpoſed ſo unſkilfully, that one cannot walk over it without running the riſk of falling, except when the ſtreets are rendered ſmooth and equal by the ſnow that falls and freezes in the winter. Notwithſtanding the ſeverity of the cold in this place, there is always plenty of good proviſions; butchers meat, poultry, wild fowl; and fiſh, in a great variety, are ſold ſurpriſingly cheap.

The moſt remarkable edifice in Archangel is a large townhouſe, built of ſquare ſtones in the Italian manner, and divided into three parts. One of theſe conſiſts of large commodious apartments, for the accommodation of merchants, ſtrangers as well as natives: here they are permitted to reſide with their merchandiſe till the month of October, when all the foreign ſhips ſet ſail for their reſpective countries. Then, too, the native traders are obliged to remove their quarters from the townhouſe. In 1793 great part of this city and ſuburbs was deſtroyed by fire, but has ſince been elegantly rebuilt.

ARCHBISHOP, the name of a church dignitary of

Archbiſhop.

of the firſt claſs. Archbiſhops were not known in the eaſt till about the year 320; and though there were ſome ſoon after this who had the title, yet that was only a perſonal honour, by which the biſhops of conſiderable cities were diſtinguiſhed. It was not till of late that archbiſhops became metropolitans, and had ſuffragans under them. Athanaſius appears to be the firſt who uſed the title *Archbiſhop*, which he gave occaſionally to his predeceſſor; Gregory Nazianzen, in like manner, gave it to Athanaſius; not that either of them were entitled to any juriſdiction, nor even any precedence in virtue of it. Among the Latins, Iſidore Hiſpalenſis is the firſt that ſpeaks of archbiſhops. He diſtinguiſhes four orders or degrees in the eccleſiaſtical hierarchy, viz. patriarchs, archbiſhops, metropolitans, and biſhops.

The archbiſhop, beſide the inſpection of the biſhops and inferior clergy in the province over which he preſides, exerciſes epiſcopal juriſdiction in his own dioceſe. He is guardian of the ſpiritualties of any vacant ſee in his province, as the king is of the temporalties; and exerciſes eccleſiaſtical juriſdiction in it. He is entitled to preſent by lapſe to all the eccleſiaſtical livings in the diſpoſal of his dioceſan biſhop, if not filled within ſix months. He has likewiſe a cuſtomary prerogative, upon conſecrating a biſhop, to name a clerk or chaplain to be provided for by ſuch biſhop; in lieu of which it is now uſual to accept an option. He is ſaid to be enthroned when veſted in the archbiſhopric; whereas biſhops are ſaid to be inſtalled.

The eccleſiaſtical government of England is divided into two provinces, viz. Canterbury and York. Canterbury hath the following ſuffragan biſhoprics appertaining to it, St Aſaph, Bangor, Bath and Wells, Briſtol, Chicheſter, Litchfield and Coventry, St David's, Ely, Exeter, Glouceſter, Hereford, Landaff, Lincoln, London, Norwich, Oxford, Peterborough, Rocheſter, Saliſbury, Wincheſter, and Worceſter. To York appertaineth the biſhoprics of Carliſle, Cheſter, and Durham; to which may be added the biſhopric of Sodor and Man, whoſe biſhop is not a lord of parliament. See Canterbury and York.

The archbiſhop of Canterbury had anciently, viz. till the year 1152, juriſdiction over Ireland as well as England, and was ſtyled a *patriarch*, and ſometimes *alterius orbis papa*, and *orbis Britannici pontifex*. Matters were done and recorded in his name thus, *Anno pontificatus noſtri primo*, &c. The firſt archbiſhop of Canterbury was Auſtin, appointed by King Ethelbert, on his converſion to Chriſtianity, about the year 598. He was alſo *regatus natus*. He even enjoyed ſome ſpecial marks of royalty; as, to be patron of a biſhopric, which he was of Rocheſter; and to make knights, coin moneys, &c. He is ſtill the firſt peer of England, and the next to the royal family; having precedence of all dukes and all great officers of the crown. It is his privilege, by cuſtom, to crown the kings and queens of this kingdom. He may retain and qualify eight chaplains; whereas a duke is allowed by ſtatute only ſix. He has, by common law, the power of probate of wills and teſtaments, and granting letters of adminiſtration. He has alſo a power to grant licenſes and diſpenſations in all caſes formerly ſued for in the court of Rome, and not repugnant to the law of God. He accordingly iſſues ſpecial licenſes to marry, to hold two livings, &c. and he exerciſes the right of conferring degrees. He alſo holds ſeveral courts of judicature: as, court of arches, court of audience, prerogative court, and court of peculars.

Archbiſhopric || Archdeacon.

The archbiſhop of York has the like rights in his province as the archbiſhop of Canterbury. He has precedence of all dukes not of the royal blood, and of all officers of ſtate, except the lord high chancellor. He has alſo the rights of a court palatine over Hexamſhire. The firſt archbiſhop of York was Paulinus, appointed by Pope Gregory about the year 622. He had formerly juriſdiction over all the biſhops of Scotland; but in the year 1470, Pope Sextus IV. created the biſhop of St Andrew's archbiſhop and metropolitan of all Scotland.

Scotland, whilſt epiſcopacy prevailed in that country, had two *archbiſhops*, of St Andrew's and Glaſgow; of which the former was accounted the metropolitan; and, even before it arrived at the dignity of an archbiſhopric, reſiſted with great ſpirit all the attempts of the archbiſhops of York in England to become the metropolitans of Scotland. The ſees of Argyll, Galloway, and the Iſles, were ſuffragans to Glaſgow; all the others in the kingdom to St Andrew's.

Ireland has four archbiſhops; of Armagh, Dublin, Caſhel, and Tuam; of whom the former is primate of all Ireland.

ARCHBISHOPRIC, in *Eccleſiaſtical Geography*, a province ſubject to the juriſdiction of an archbiſhop.

ARCHBUTLER, one of the great officers of the German empire, who preſents the cup to the emperor on ſolemn occaſions. This office belongs to the king of Bohemia.

ARCHCHAMBERLAIN, an officer of the empire, much the ſame with the great chamberlain in England. The elector of Brandenburg was appointed by the golden bull archchamberlain of the empire.

ARCHCHANCELLOR, a high officer who, in ancient times, preſided over the ſecretaries of the court. Under the two firſt races of the kings of France, when their territories were divided into Germany, Italy, and Arles, there were three archchancellors: and hence the three archchancellors ſtill ſubſiſting in Germany; the archbiſhop of Mentz being archchancellor of Germany, the archbiſhop of Cologn, and the archbiſhop of Treves.

ARCHCHANTOR, the preſident of the chantors of a church.

ARCHCOUNT, a title formerly given to the earl of Flanders, on account of his great power and riches.

ARCHDEACON, an eccleſiaſtical dignitary or officer next to a biſhop, whoſe juriſdiction extends either over the whole dioceſe or only a part of it. He is uſually appointed by the biſhop himſelf; and hath a kind of epiſcopal authority, originally derived from the biſhop, but now independent and diſtinct from his. He therefore viſits the clergy; and has his ſeparate court for puniſhment of offenders by ſpiritual cenſures, and for hearing all other cauſes of eccleſiaſtical cognizance. There are 60 archdeacons in England.

Archdeacon's Court, is the moſt inferior court in the whole eccleſiaſtical polity. It is held in the archdeacon's abſence, before a judge appointed by himſelf and called his *official*; and its juriſdiction is ſometimes

Archdruid || Archers.

in concurrence with, ſometimes in excluſion of, the biſhop's court of the dioceſe. From hence, however, by ſtatute 24 Hen. VIII. c. 12. there lies an appeal to that of the biſhop.

ARCHDRUID, the chief or pontiff of the ancient druids of a nation. See DRUID.

ARCHDUKE, a title peculiar to the houſe of Auſtria; all the ſons of which are archdukes, and the daughters archducheſſes. See DUKE.

ARCHELAUS, a celebrated Greek philoſopher, the diſciple of Anaxagoras, flouriſhed about 440 years before Chriſt. He read lectures at Athens, and did not depart much from the opinions of his maſter. He taught that there was a double principle of all things, namely, the *expanſion* and *condenſation* of the air, which he regarded as infinite. Heat, according to him, was in continual motion. Cold was ever at reſt. The earth, which was placed in the midſt of the univerſe, had no motion. It originally reſembled a wet marſh, but was afterwards dried up; and its figure, he ſaid, reſembled that of an egg. Animals were produced from the heat of the earth, and even men were formed in the ſame manner. All animals have a ſoul, which was born with them: but the capacities of which vary according to the ſtructure of the organs of the body in which it reſides.—Socrates, the moſt illuſtrious of his diſciples, was his ſucceſſor.

ARCHELAUS, the ſon of Herod the Great, was declared king of Judea the ſecond year after the birth of Chriſt. He put to death 3000 perſons before he went to Rome to be confirmed by Auguſtus. However, that emperor gave him half of what had been poſſeſſed by his father; but at length, on freſh complaints exhibited againſt him by the Jews, he baniſhed him to Vienne in Gaul, A. D. 6. where he died.

ARCHELAUS, the ſon of Apollonius, one of the greateſt ſculptors of antiquity, was a native of Ionia, and is thought to have lived in the time of the emperor Claudius. He executed, in marble, the apotheoſis of Homer. This maſterpiece in ſculpture was found in 1568, in a place named *Frat ochia*, belonging to the princes of Colonna, where, it is ſaid, the emperor Claudius had a pleaſure houſe. Father Kircher, Cupert, Spanheim, and ſeveral other learned antiquaries, have given a deſcription and explication of this work.

ARCHERS, a kind of militia or ſoldiery armed with bows and arrows. The word is formed of *arcus*, "a bow;" whence *arcuarius*, and even *arquis*, and *arquites*, as they are alſo denominated in the corrupt ſtate of the Latin tongue.

Archers were much employed in former times; but they are now laid aſide, excepting in Turkey and ſome of the eaſtern countries; where there are companies of archers ſtill ſubſiſting in their armies, and with which they did terrible execution at the battle of Lepanto.—As an exerciſe, the practice of archery is ſtill kept up in many places. See the article ARCHERY.

In France, the officers who attend the lieutenants de police and provoſts to make captures, ſeizures, arreſts, &c. are called *archers*; though their arms be only halberds or carabines. In this ſenſe they ſay, the *archers* of the *grand prevot de l'hotel*; of the *prevot des marchands*; the city *archers*; the *archers du guet*, or of the watch, &c.—Small parties of *archers*, called alſo *gens de marechauſſée*, are continually patrolling on the great roads, to ſecure them againſt robbers.—The carriages of Lyons, &c. are always eſcorted by a party of archers. To the diligence of theſe archers or marſhal's men, it is partly owing, that perſons now travel in all parts of France in the utmoſt ſecurity; there being fewer robberies on the highway in that whole kingdom in a year than about London in a week. Archery.

ARCHERY, the art or exerciſe of ſhooting with a bow and arrow.

In moſt nations, the bow was anciently the principal implement of war; and by the expertneſs of the archers alone was often decided the fate of battles and of empires.—In this iſland archery was greatly encouraged in former times, and many ſtatutes were made for the regulation thereof; whence it was that the Engliſh archers in particular became the beſt in Europe, and procured them many ſignal victories.

The *Artillery Company* of London, though they have long diſuſed the weapon, are the remains of the ancient fraternity of bowmen or archers. Artillery (*artillérie*) is a French term ſignifying *archery*; as the *king's lawyer* is in that language ſtyled *artillier du roy*: And from that nation the Engliſh ſeem to have learnt at leaſt the croſs-bow archery. We therefore find that William the Conqueror had a conſiderable number of bowmen in his army at the battle of Haſtings, when no mention is made of ſuch troops on the ſide of Harold: And it is ſuppoſed that theſe Norman archers ſhot with the arbaleſt (or croſs-bow), in which formerly the arrow was placed in a groove, being termed in French a *quadrel*, and in Engliſh a *bolt*. *Archæologia*, vol. vii.

Of the time when ſhooting with the long bow firſt began among the Engliſh, at which exerciſe they afterwards became ſo expert, there appear no certain accounts. Their chroniclers do not mention the uſe of archery as expreſsly applied to the croſs bow, or the long bow, till the death of Richard I. who was killed by an arrow at the ſiege of Limoges in Guienne, which Hemmingford mentions to have iſſued from a croſs bow.—After this, which happened in 1199, there appear not upon record any notices of archery for nearly 150 years, when an order was iſſued by Edward III. in the 15th year of his reign, to the ſheriffs of moſt of the Engliſh counties for providing 500 white bows and 500 bundles of arrows, for the then intended war againſt France. Similar orders are repeated in the following years; with this difference only, that the ſheriff of Glouceſterſhire is directed to furniſh 500 painted bows as well as the ſame number of white. The famous battle of Creſſy was fought four years afterwards, in which our chroniclers ſtate that we had 2000 archers, who were oppoſed to about the ſame number of the French, together with a circumſtance which ſeems to prove, that by this time we uſed the long bow, whilſt the French archers ſhot with the arbaleſt. The circumſtance alluded to is as follows: Previouſly to the engagement there fell a very heavy rain, which is ſaid to have much damaged the bows of the French, or perhaps rather the ſtrings of them. Now the long bow (when unſtrung) may be moſt conveniently covered, ſo as to prevent the rain's injuring it; nor is there ſcarcely any addition to the weight from a caſe; whereas the arbaleſt is of a moſt inconvenient form to be ſheltered from the weather. As therefore, in the year 1342, orders were iſſued to the ſheriffs of each

Archery. county to provide 500 bows, with a proper proportion of arrows, it ſeems probable that theſe were long bows, and not the arbaleſt.

At the above-mentioned battle, the Engliſh aſcribed their victory chiefly to the archers.—The battle of Poictiers was fought A. D. 1356, and gained by the ſame means.

Sometimes the archers gained great victories without even the leaſt aſſiſtance from the men at arms; as particularly, the deciſive victory over the Scots at Homildon, A. D. 1402. In that bloody battle, the men-at-arms did not ſtrike a ſtroke, but were mere ſpectators of the valour and victory of the archers. The earl of Douglas, who commanded the Scotch army in that action, enraged to ſee his men falling thick around him by ſhowers of arrows, and truſting to the goodneſs of his armour (which had been three years in making), accompanied by about eighty lords, knights, and gentlemen, in complete armour, ruſhed forward, and attacked the Engliſh archers ſword-in hand. But he ſoon had reaſon to repent his raſhneſs. The Engliſh arrows were ſo ſharp and ſtrong, and diſcharged with ſo much force, that no armour could repel them. The earl of Douglas, after receiving five wounds, was made priſoner; and all his brave companions were either killed or taken. Philip de Comines acknowledges, what our own writers aſſert, that the Engliſh archers excelled thoſe of every other nation; and Sir John Forteſcue ſays again and again,—"that the might of the realme of England ſtandyth upon archers." The ſuperior dexterity of their archers gave the Engliſh a great advantage over their capital enemies the French and Scots. The French depended chiefly on their men-at-arms, and the Scots on their pikemen; but the ranks of both were often thinned and thrown into diſorder by flights of arrows before they could reach their enemies.

Henry's Hiſt. vol. v. p. 463.

James I. of Scotland, who had ſeen and admired the dexterity of the Engliſh archers, and who was himſelf an excellent archer, endeavoured to revive the exerciſe of archery among his own ſubjects, by whom it had been too much neglected. With this view, he ridiculed their awkward manner of handling their bows, in his humorous poem, of Chriſt's Kirk on the Green; and procured the following law to be made in his firſt parliament, A. D. 1424, immediately after his return to Scotland: "That all men might buſk thame to be archares fra the be 12 years of age; and that ilk ten punds worth of land thair be made bow markes, and ſpeciallie near paroche kirks, quhairn upon halie dayis men may cum, and at the leiſt ſchute thryſe about, and have uſage of archarie; and whaſa uſis not archarie, the laird of the land ſal rais of him a wedder; and giff the laird raiſis not the ſaid pane, the king's ſhiref, or his miniſters, ſal rais it to the king." But the untimely death of that excellent prince prevented the effectual execution of this law.

There is not found any act of parliament of Henry V. in relation to archery, and all the orders in Rymer till the battle of Agincourt relate to great guns, from which he ſeems at firſt to have expected more conſiderable advantage than from the training of bowmen. It ſhould ſeem, however, that this ſort of artillery, from its unwieldineſs, bad and narrow roads, together with other defects, was as yet but of little uſe in military operations. In the year 1417 the king himſelf aſcribes his victory at Agincourt to the archers, and directs the ſheriffs of many counties to pluck from every goole ſix wing feathers for the purpoſe of improving arrows, which are to be paid for by the king. Archery.

In 1421, though the French had been defeated both at Creſſy, Poictiers, and Agincourt, by the Engliſh archers, yet they ſtill continued the uſe of the croſs bow; for which reaſon, Henry V. as duke of Normandy, confirms the charters and privileges of the baliſtarii, who had been long eſtabliſhed as a fraternity in his city of Rouen. *Arbaleſtarii.*

In the fifth of Edward IV. an act paſſed, that every Engliſhman, and Iriſhman dwelling with Engliſhmen, ſhall have an Engliſh bow of his own height, which is directed to be made of yew, wych, hazel, aſh, or awburne, or any other reaſonable tree according to their power. The next chapter alſo directs that butts ſhall be made in every townſhip, which the inhabitants are obliged to ſhoot up and down every feaſt day, under the penalty of a halfpenny when they ſhall omit this exerciſe.

In the 14th year, however, of this ſame king, it appears by Rymer's *Fœdera*, that 1000 archers were to be ſent to the duke of Burgundy, whoſe pay is ſettled at ſixpence a day, which was a conſiderable ſum in theſe times, when the value of money was ſo much higher than it is at preſent. This circumſtance ſeems to prove, very ſtrongly, the great eſtimation in which archers were ſtill held. In the ſame year, Edward, preparing for a war with France, directs the ſheriffs to procure bows and arrows, "as moſt ſpecially requiſite and neceſſary."

On the war taking place with Scotland, eight years after this, Edward provides both ordnance and archers; ſo that though the uſe of *artillery* (as we now term it) was then gaining ground, yet that of the bow and arrow was not neglected.

Richard III. by his attention to archery, was able to ſend 1000 bowmen to the duke of Bretagne, and he availed himſelf of the ſame troops at the battle of Boſworth.

During the reign of Henry VII. however, there appears no order relative to gunpowder or artillery; whilſt on the other hand, in 1488, he directs a large levy of archers to be ſent to Brittany, and that they ſhall be reviewed before they embark. In the 19th year of his reign, the ſame king forbids the uſe of the croſs bow, becauſe "the long bow had been much uſed in this realm, whereby honour and victory had been gotten againſt outward enemies, the realm greatly defended, and much more the dread of all Chriſtian princes by reaſon of the ſame."

During the reign of Henry VIII. ſeveral ſtatutes were made for the promotion of archery. The 8th Eliz. c. 10. regulates the price of bows, and the 13th Eliz. c. 14. enacts, that bow ſtaves ſhall be brought into the realm from the Hanſe towns and the Eaſtward; ſo that archery ſtill continued to be an object of attention in the legiſlature.

In Rymer's *Fœdera* there is neither ſtatute or proclamation of James I. on this head; but it appears by Dr Birch's life of his ſon (Prince Henry), that at eight years of age, he learned to ſhoot both with the bow

Archery. bow and gun, whilſt at the ſame time this prince had in his eſtabliſhment an officer who was ſtyled *bow-bearer*. The king granted a ſecond charter to the Artillery Company, by which the powers they had received from Henry VIII. were conſiderably extended.

Charles I. appears, from the dedication of a treatiſe entitled *The Bowman's Glory*, to have been himſelf an archer; and in the eighth year of his reign he iſſued a commiſſion to the chancellor, lord mayor, and ſeveral of the privy council, to prevent the fields near London being ſo encloſed as "to interrupt the neceſſary and profitable exerciſe of ſhooting," as alſo to lower the mounds where they prevented the view from one mark to another.

Catharine of Portugal (queen to Charles II.) ſeems to have been much pleaſed with the ſight at leaſt of this exerciſe; for in 1676, by the contribution of Sir Edward Hungerford and others, a ſilver-badge for the marſhal of the fraternity was made, weighing 25 ounces, and repreſenting an archer drawing the long bow (in the proper manner) to his ear, with the following inſcription: *Reginæ Catharinæ Sagittarii.* The ſupporters are two bowmen, with the arms of England and Portugal. In 1632 there was a moſt magnificent cavalcade and entertainment given by the Finſbury archers, when they beſtowed the titles of "duke of Shoreditch," "marquis of Iſlington," &c. upon the moſt deſerving. Charles II. was preſent upon this occaſion; but the day being rainy, he was obliged ſoon to leave the field.

So lately as the year 1753 targets were erected in the Finſbury fields, during the Eaſter and Whitſun holidays; when the beſt ſhooter was ſtyled Captain for the enſuing year, and the ſecond Lieutenant.

Why this military weapon was ſo deciſive in the battles of former days, the following reaſons may be ſuggeſted.

Before the introduction of fire arms the enemy could only be ſtruck at a diſtance by ſlings, the bow uſed by the ancients, or the croſs bow; to all which the Engliſh long bow was infinitely ſuperior. As for ſlings, they never have been uſed in the more northern parts of Europe by armies in the field; nor does their uſe indeed ſeem to have been at all convenient or extenſively practicable, for two principal reaſons: In the firſt place, ſlingers cannot advance in a compact body, on account of the ſpace to be occupied by this weapon in its rotatory motion; in the next place, the weight of the ſtones to be carried muſt neceſſarily impede the ſlingers greatly in their movements. The bow of the ancients again, as repreſented in all their reliefs, was a mere toy compared with that of our anceſtors; it was therefore chiefly uſed by the Parthians, whoſe attacks (like thoſe of the preſent Arabs) were deſultory. As for the croſs bow, it is of a moſt inconvenient form for carriage, even with the modern improvements; and, in caſe of rain, could not be eaſily ſecured from the weather. After the firſt ſhot, moreover, it could not be recharged under a conſiderable time, whilſt the bolts were alſo heavy and cumberſome. The Engliſh long bow, on the other hand, together with the quiver of arrows, was eaſily carried by the archer, as eaſily ſecured from the rain, and recharged almoſt inſtantaneouſly. It is not, therefore extraordinary, that troops, who ſolely uſed this moſt effectual weapon, ſhould generally obtain the victory, even when oppoſed to much more numerous armies. Archery.

It may be urged, that theſe loſſes having been experienced by our enemies, muſt have induced them to practiſe the ſame mode of warfare.—But it is thought that the long bow was not commonly uſed even in England till the time of Edward III. when the victory at Creſſy ſufficiently proclaimed the ſuperiority of that weapon. It required, however, ſo much training before the archer could be expert, that we muſt not be ſurpriſed if ſoon afterwards this military exerciſe was much neglected, as appears by the preambles of ſeveral ancient ſtatutes. Whilſt the military tenures ſubſiſted, the ſovereign could only call upon his tenants during war, who therefore attended with the weapons they had been uſed to, and which required no previous practiſe. On the other hand, the Engliſh archers were obliged by acts of parliament, even in time of peace, to erect butts in every pariſh, and to ſhoot on every Sunday and holiday, after repairing perhaps to theſe butts from a conſiderable diſtance, whilſt the expence of at leaſt a yew bow is repreſented as being a charge which they were ſcarcely equal to. The king and parliaments of this country having thus compelled the inhabitants to ſuch training, the Engliſh armies had (it ſhould ſeem) the ſame advantage over their enemies as the excluſive uſe of fire-arms would give us at preſent.

It appears alſo, by what hath been already ſtated, that the long bow continued to be in eſtimation for more than two centuries after gunpowder was introduced, which probably aroſe from muſkets being very cumberſome and unwieldy. It is well known that rapid movements are generally deciſive of the campaign; and for ſuch the archers were particularly adapted, becauſe, as they could not be annoyed at the ſame diſtance by the weapons of the enemy, they had ſcarcely any occaſion for armour. The flower of ancient armies likewiſe was the cavalry, againſt which the long bow never failed to prevail, as man and horſe were too large objects to be miſſed: and hence the great number of French nobility who were priſoners at Creſſy, Poictiers, and Agincourt; for being diſmounted (if not wounded) whilſt they were alſo clad in heavy armour, they could not make their eſcape. The ſame reaſon accounts for the Engliſh obtaining theſe ſignal victories with ſo inferior numbers; for the nobility and gentry thus becoming priſoners, the other parts of the French army made little or no reſiſtance. No wonder, therefore, that in England the greateſt anxiety was ſhown to promote the exerciſe of this moſt important weapon, and that ſo many ſtatutes were made for that purpoſe.

In Scotland, alſo, little leſs attention, though apparently not with equal ſucceſs, was ſhown to the encouragement of the art. In both kingdoms, it was provided, that the importers of merchandiſe ſhould be obliged, along with their articles of commerce, to import a certain proportion of bows, bow ſtaves, and ſhafts for arrows. In both, every perſon was enjoined to hold himſelf provided in bows and arrows, and was preſcribed the frequent uſe of archery. In both, a reſtraint was impoſed upon the exerciſe of other games and ſports, leſt they ſhould interfere with the uſe of the bow; for it was intended, that people ſhould be

Archery. be made expert in the uſe of it as a military weapon, by habituating them to the familiar exerciſe of it as an inſtrument of amuſement. As there was no material difference between the activity and bodily ſtrength of the two people, it might be ſuppoſed that the Engliſh and Scots wielded the bow with no unequal vigour and dexterity: but from undoubted hiſtorical monuments it appears that the former had the ſuperiority; of which one inſtance has been already narrated. By the regulations preſcribed in their ſtatute book for the practice of archery, we find that the Engliſh ſhot a very long bow, thoſe who were arrived at their full growth and maturity being prohibited from ſhooting at any mark that was not diſtant upwards of 220 yards.

In the uſe of the bow, great dexterity as well as ſtrength ſeems to have been requiſite. Though we hear of arrows at Cheviot Chaſe which were a yard long, yet it is by no means to be ſuppoſed that the whole band made uſe of ſuch, or could draw them to the head. The regulation of the Iriſh ſtatute of Edward IV. viz. that the bow ſhall not exceed the height of the man, is allowed by archers to have been well conſidered; and as the arrow ſhould be half the length of the bow, this would give an arrow of a yard in length to thoſe only who were ſix feet high. A ſtrong man of this ſize in the preſent times cannot eaſily draw above 27 inches, if the bow is of a proper ſtrength to do execution at a conſiderable diſtance. At the ſame time it muſt be admitted, that as our anceſtors were obliged by ſome of the old ſtatutes to begin ſhooting with the long bow at the age of ſeven, they might have acquired a greater ſlight in this exerciſe than their deſcendants, though the latter ſhould be allowed to be of equal ſtrength.

As the ſhooting with the long bow was firſt introduced in England, and practiſed almoſt excluſively for nearly two centuries, ſo it hath occaſioned a peculiar method of drawing the arrow to the ear and not to the breaſt. That this is contrary to the uſage of the ancients is very clear from their reliefs, and from the tradition of the Amazons cutting off one of their paps as it occaſioned an impediment to their ſhooting. The Finſbury archer is therefore repreſented in this attitude of drawing to the ear, both in the *Bowman's Glory*, and in the ſilver badge given by Catharine to the Artillery Company. Not many years ago there was a man named Topham, who exhibited ſurpriſing feats of ſtrength, and who happened to be at public houſe near Iſlington, to which the Finſbury archers reſorted after their exerciſe. Topham conſidered the long bow as a plaything, only fit for a child; upon which one of the archers laid him a bowl of punch, that he could not draw the arrow two-thirds of its length. Topham accepted this bet with the greateſt confidence of winning; but bringing the arrow to his breaſt inſtead of his ear, he was greatly mortified by paying the wager, after many fruitleſs efforts.

As to the diſtance to which an arrow can be ſhot from a long bow with the beſt elevation of 45 degrees, that muſt neceſſarily depend much both upon the ſtrength and ſlight of the archer; but in general the diſtance was reckoned from eleven to twelve ſcore yards. The butts for exerciſe, as above noticed, were directed to be diſtant upwards of 220 yards. There is indeed a tradition, than an attorney of Wigan in Lancaſhire (named Leigh) ſhot a mile in three ſlights; Archery. but the ſame tradition ſtates, that he placed himſelf in a very particular attitude, which cannot be recommonly in this exerciſe. According to Neade, a archer might ſhoot ſix arrows in the time of charging and diſcharging one muſket.

The archers conſider an arrow of from 2 to 2 drop weight to be the beſt for flight or hitting a mark at a conſiderable diſtance, and that yew is the beſt material of which they can be made. As to the feathers, that of a gooſe is preferred; it is alſo wiſhed, that the bird ſhould be two or three years old, and that the feather may drop of itſelf. Two out of three feathers in an arrow are commonly white, being plucked from the gander; but the third is generally brown or gray, being taken from the gooſe; and, from this difference in point of colour, informs the archer when the arrow is properly placed. From this moſt diſtinguiſhed part therefore the whole arrow ſometimes receives its name: And this, by-the-by, affords an explanation of the gray gooſe wing in the ballad of Cheviot Chaſe. Arrows were armed anciently with flint or metal heads, latterly with heads of iron; of theſe there were various forms and denominations. By an act of parliament made the 7th of Henry IV. it was enacted, That for the future all the heads for arrows and quarrels ſhould be well boiled or braſed, and hardened at the points with ſteel; and that every arrow head or quarrel ſhould have the mark of the maker; workmen diſobeying this order, were to be fined and impriſoned at the king's will, and the arrow heads or quarrels to be forfeited to the crown.

Arrows were reckoned by ſheaves, a ſheaf conſiſting Croſe on of 24 arrows. They were carried in a quiver, called *Ancient Ar-* alſo an *arrow caſe*, which ſerved for the magazine; *mour.* arrows for immediate uſe were worn in the girdle. In ancient times phials of quicklime, or rather combuſtible matter, for burning houſes or ſhips, were fixed on the heads of arrows, and ſhot from long bows. This has been alſo practiſed ſince the uſe of gunpowder. Neade ſays, he has known by experience, that an archer may ſhoot an ounce of fireworks upon an arrow 12 ſcore yards. Arrows with wildfire, and arrows for fireworks, are mentioned among the ſtores at Newhaven and Berwick, in the 1ſt of Edward VI.

The force with which an arrow ſtrikes an object at a moderate diſtance, may be conceived from the account given by King Edward VI. in his journal; wherein he ſays, that 100 archers of his guard ſhot before him two arrows each, and afterwards all together; and that they ſhot at an inch board, which ſome pierced quite through and ſtruck into the other board; divers pierced it quite through with the heads of their arrows, the boards being well-ſeaſoned timber; their diſtance from the mark is not mentioned.

To protect our archers from the attacks of the enemy's horſe, they carried long ſtakes pointed at both ends: theſe they planted in the earth, ſloping before them. In the 1ſt of Edward VI. 350 of theſe were in the ſtores of the town of Berwick, under the article of archers ſtakes; there were alſo at the ſame time eight bundles of archers ſtakes in Pontefract caſtle.

To prevent the bowſtring from ſtriking the left

Archery. arm, the arm is covered with a piece of ſmooth leather, faſtened on the outſide of the arm; this is called a *bracer;* and to guard the fingers from being cut by the bowſtring, archers wore ſhooting gloves. Chaucer in his prologue to the Canterbury Tales, thus deſcribes an archer of his day: Archery.

And he was clade in cote and hode of grene,
A ſheaf of peacock arwes bright and keen,
Under his belt he bare full thriftily:
Wel coude he dreſſe his takel yewmanly,
His arwes drouped not with fetheres lowe,
And in his hand he bare a mighty bowe,
A not hed hadde he, with broune viſage,
Of wood craft coude he wel all the uſage;
Upon his arms he had a gai bracer,
And by his ſide a ſwerd and a bokeler,
And on the other ſide a gaie daggere
Harneiſed wel, and ſharp as pointe of ſpere:
A criſtofre on his breaſt of ſilver ſhene,
A horn he bare, the baudrik was of grene,
A foreſter was he ſothely as I geſſe.

Though archery continued to be encouraged by the king and legiſlature for more than two centuries after the firſt knowledge of the effects of gunpowder, yet by the latter end of the reign of Henry VIII. it ſeems to have been partly conſidered as a paſtime. Arthur, the elder brother of Henry, is ſaid to have been fond of this exerciſe, inſomuch that a good ſhooter was ſtyled Prince Arthur. We are alſo informed, that he pitched his tent at Mile End in order to be preſent at this recreation, and that Henry his brother alſo attended. When the latter afterwards became king, he gave a prize at Windſor to thoſe who ſhould excel in this exerciſe; and a capital ſhot having been made, Henry ſaid to Barlow (one of his guards), "If you ſtill win, you ſhall be duke over all archers." Barlow therefore having ſucceeded, and living in Shoreditch, was created duke thereof. Upon another occaſion, Henry and the queen were met by 200 archers on Shooter's hill, which probably took its name from their aſſembling near it to ſhoot at marks. This king likewiſe gave the firſt charter to the Artillery Company in the 29th year of his reign, by which they are permitted to wear dreſſes of any colour except purple and ſcarlet, to ſhoot not only at marks but birds, if not pheaſants or herons, and within two miles of the royal palaces. They are alſo enjoined by the ſame charter not to wear furs of a greater price than thoſe of the martin. The moſt material privilege, however, is, that of indemnification from murder, if any perſon paſſing between the ſhooter and the mark is killed, provided the archers have firſt called out *faſt.*

The following deſcription of an archer, his bow, and accoutrements, is given in a MS. written in the time of Queen Elizabeth. "Captains and officers ſhould be ſkilful of that moſt noble weapon, and to ſee that their ſoldiers according to their draught and ſtrength have good bowes, well nocked, well ſtrynged, everie ſtrynge whippe in their nocke, and in the myddes rubbed with wax, braſer and ſhuting glove, ſome ſpare ſtrynges trymed as aforeſaid, every man one ſheſe of arrows, with a caſe of leather defenſible againſt the rayne, and in the ſame fower and twentie arrowes, whereof eight of them ſhould be lighter than the reſidue, to gall or aſtoyne the enemye with the hailſhot of light arrows, before they ſhall come within the danger of their harquebuſs ſhot. Let every man have a brigandine, or a little cote of plate, a ſkull or hufkyn, a mawle of leade of five foote in lengthe, and a pike, and the ſame hanging by his girdle, with a hook and a dagger; being thus furniſhed, teach them by muſters to marche, ſhoote, and retire, keepinge their faces upon the enemy's. Sumtyme put them into great nowmbers, as to battell apparteyneth, and thus uſe them often times practiſed, till they be perfecte; ffor thoſe men in battell ne ſkirmiſh can not be ſpared. None other weapone maye compare with the ſame noble weapon." Archery.

The long bow, as already obſerved, maintained its place in our armies long after the invention of fire arms. Nor have there been wanting experienced ſoldiers who were advocates for its continuance, and who in many caſes even preferred it to the harquebuſs or muſket. King Charles I. twice granted ſpecial commiſſions under the great ſeal for enforcing the uſe of the long bow. The firſt was in the 4th year of his reign: but this was revoked by proclamation four years afterwards, on account of divers extortions and abuſes committed under ſanction thereof. The ſecond, anno 1633, in the 9th year of his reign, to William Neade and his ſon, alſo named William, wherein the former is ſtyled an ancient archer, who had preſented to the king a warlike invention for uniting the uſe of the pike and bow, ſeen and approved by him and his council of war; wherefore his majeſty had granted them a commiſſion to teach and exerciſe his loving ſubjects in the ſaid invention, which he particularly recommended the chief officers of his trained bands to learn and practiſe; and the juſtices and other chief magiſtrates throughout England, are therein enjoined to uſe every means in their power to aſſiſt Neade, his ſon, and all perſons authorized by them in the furtherance, propagation, and practice of this uſeful invention. Both the commiſſions and proclamation are printed at large in Rymer. At the breaking out of the civil war, the earl of Eſſex iſſued a precept, dated in November 1643, for ſtirring up all well affected people by benevolence, towards the raiſing a company of archers for the ſervice of the king and parliament.

Archery with the long bow continues to be uſed as a manly exerciſe by the inhabitants of Geneva, and in many parts of Flanders; nor is it totally neglected in Great Britain. There are ſeveral ſocieties of archers in England; the chief of which are, the *Woodmen of Arden*, and the *Toxophilite*. But the moſt noted ſociety of this kind, now exiſting, is

The *Royal Company of Archers* in Scotland.—The ancient records of this Company having been deſtroyed by fire about the beginning of the laſt century, no authentic traces of their inſtitution now remain. It is ſaid that they owe their origin to the commiſſioners appointed in the reign of James I. of Scotland for enforcing and overſeeing the exerciſe of archery in different counties. Thoſe commiſſioners, who were in general men of rank and power, picking out amongſt the better ſort of people under their cognizance the moſt expert archers, formed them into a company, and upon perilous occaſions made a preſent of their ſervices to the king as his chief body guards; in which ſituation

Archery

tion they often diſtinguiſhed themſelves for their loyalty, their courage, and ſkill in archery. This rank of the king's principal body guards the Royal Company ſtill claim, within ſeven miles of the metropolis of Scotland.

Certain it is, that by an act of the privy council of Scotland, in 1677, this Company was recognized under the name and title of "His Majeſty's Company of Archers:" and by the ſame act a piece of plate of the value of 20l. ſterling was ordered to be given to be ſhot for by them at their annual parades, called *Weapon-ſhawings*, and to be called *The King's Prize*.

At this period the Royal Company conſiſted, as it does at preſent, of the principal nobility and gentry of Scotland. But their unfortunate attachment to anti-revolution principles, upon that event's taking place, put almoſt a period to their exiſtence: Their public parades or marches were diſcontinued, and the royal prize was withheld.

Upon the acceſſion of Queen Anne, their former ſplendour was revived; and in the year 1703 they obtained a royal charter, confirming in general terms all their former rights and privileges, and conferring others upon them. But their partiality to the family of Stuart was at various after periods the cauſe of a temporary proſperity and decline.

Theſe unhappy differences of opinion having totally ſubſided, the Royal Company are now more numerous and flouriſhing than ever, and perhaps even more dexterous archers. His preſent majeſty, as a mark of his royal patronage and approbation, has been pleaſed to revive the royal prize, which for the firſt time was ſhot for upon the 28th of July 1788 by a numerous and reſpectable meeting.

The Woodmen of Arden and the Toxophilite have lately been pleaſed to admit the members of the Royal Company to the freedom of their ſocieties: theſe grants have been followed by reciprocal diplomas from the Royal Company; ſo that the three chief ſocieties of archers in Britain may be ſaid to be now incorporated into one.

The prizes belonging to this Company, and which are annually ſhot for, are, 1. A ſilver arrow, given by the town of Muſſelburgh, which appears to have been ſhot for as early as the year 1603. The victor in this, as in the other prizes, except the king's prize, has the cuſtody of it for a year, then returns it with a medal appended, on which are engraved any motto and device which the gainer's fancy dictates. 2. A ſilver arrow given by the town of Peebles, A. D. 1626. 3. A ſilver arrow given by the city of Edinburgh, A. D. 1709. 4. A ſilver punch bowl of about the value of 50l. made of Scottiſh ſilver at the expence of the Company, A. D. 1720. And, 5. The king's prize above mentioned, which becomes the abſolute property of the winner. All theſe prizes are ſhot for at what is termed *Rovers*, the marks being placed at the diſtance of 185 yards.

Beſides theſe, there is another prize annually contended for at butt or point-blank diſtance, called the *Gooſe*. The ancient manner of ſhooting for this prize was, a living gooſe was built in a turf butt, having the head only expoſed to view; and the archer who firſt hit the gooſe's head was entitled to the gooſe as his reward. But this cuſtom, on account of its barbarity, has been long ago laid aſide; and in place of the gooſe head, a mark of about an inch diameter is affixed upon each butt, and the archer who firſt hits this mark is captain of the butt ſhooters for a year.

Archery II Archers.

The affairs of the Company are managed by a preſes and ſix counſellors, who are choſen annually by the whole members. The council are veſted with the power of receiving or rejecting candidates for admiſſion, and of appointing the Company's officers civil and military.

The Royal Company now conſiſts of above 1000 members, among whom are moſt of the Scottiſh nobility of the firſt diſtinction. A number of the Company meet weekly during the ſummer ſeaſon at Edinburgh, in the Meadows, where they exerciſe themſelves in ſhooting at butts or rovers: And in the adjoining ground they have a handſome building, erected within theſe 12 years, with ſuitable offices, whither they adjourn after their exerciſe, and where they hold their elections and other meetings relative to the buſineſs of the ſociety.

The uniform of the Royal Company of Archers is tartan, lined with white, and trimmed with green and white fringes; a white laſh, with green taſſels; and a blue bonnet, with a St Andrew's croſs and feathers. The Company have two ſtandards. The firſt of theſe bears on one ſide Mars and Cupid encircled in a wreath of thiſtles; with this motto, "*In peace* and war." On the other, a yew tree, with two men dreſſed and equipped as archers, encircled as the former; motto, *Dat gloria vires*. The other ſtandard diſplays, on one ſide, a lion rampant gules, on a field or, encircled with a wreath; on the top, a thiſtle and crown; motto, *Nemo me impune laceſſet*. On the other, St Andrew on the croſs, on a field argent; at the top, a crown; motto, *Dulce pro patria periculum*.

ARCHES COURT, in Engliſh eccleſiaſtical polity, is a court of appeal, belonging to the archbiſhop of each province; whereof the judge is called the *dean of the arches*, becauſe he anciently held his court in the church of St Mary *le bow* (*Sancta Maria de arcubus*), though all the principal ſpiritual courts are now holden at Doctors Commons. His proper juriſdiction is only over the 13 peculiar pariſhes belonging to the archbiſhop in London, but the office of dean of the arches having been for a long time united with that of the archbiſhop's principal office, he now, in right of the laſt-mentioned office, receives and determines appeals from the ſentences of all inferior eccleſiaſtical courts within the province. And from him there lies an appeal to the king in chancery (that is, to a court of delegates appointed under the king's great ſeal), by ſtatute 25th Hen. VIII. c. 19. as ſupreme head of the Engliſh church, in the place of the biſhop of Rome, who formerly exerciſed this juriſdiction; which circumſtance alone will furniſh the reaſon why the Popiſh clergy were ſo anxious to ſeparate the ſpiritual court from the temporal.

ARCHETYPE, the firſt model of a work, which is copied after to make another like it. Among minters, it is uſed for the ſtandard weight by which the others are adjuſted. The archetypal world, among Platoniſts, means the world as it exiſted in the idea of God before the viſible creation.

ARCHEUS, (from ἀρχὴ, the principal, chief, or firſt

Archimo-
rides
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Archil.

firſt mover); a ſort of primum mobile ſet up by Helmont, to ſuperintend the animal economy, and preſerve it. It is akin to Plato's *anima mundi*. Hippocrates uſes the words αρχικη φυσις, to ſignify the former healthy ſtate before the attack of the diſeaſe.

ARCHIACOLYTHUS (from αρχος, *chief*, and ακολουθος, *miniſter*), an ancient dignity in cathedral churches: the miniſters whereof were divided into four orders or degrees, viz. prieſts, deacons, ſubdeacons, and acolythi; each of which had their chiefs. The chief of the acolythi was called *archiacolythus*.

ARCHIATER, ARCHIATRUS, properly denotes chief phyſician of a prince who retains ſeveral. The word is formed of αρχι, *principium*, "chief;" and ιατρος, *medicus*, a "phyſician."

ARCHIDAPIFER, (from αρχος, and *dapifer*, "ſewer,") or chief ſewer, is a great officer of the empire. The elector of Bavaria is archidapifer. The palatine of the Rhine at one time pretended this office was annexed to his palatinate; but he has ſince deſiſted.

ARCHIEROSYNES, in the Grecian antiquity, a high prieſt veſted with authority over the reſt of the prieſts, and appointed to execute the more ſacred and myſterious rites of religion.

ARCHIGALLUS, in antiquity, the high prieſt of Cybele, or the chief of the eunuch prieſts of that goddeſs, called *Galli*.

ARCHIGERONTES (from αρχος, and γερων, *old*), in antiquity, the chiefs or maſters of the ſeveral companies of artificers at Alexandria. Some have miſtaken the archigerontes for the arch-prieſts appointed to take the confeſſions of thoſe who were condemned to the mines.

ARCHIGUBERNUS, ARCHIGUBERNETA, or ARCHIGUBERNITES, in antiquity, the commander of the imperial ſhip, or that which the emperor was aboard of. Some have confounded the office of archigubernus with that of *præfectus claſſis*, or admiral, but the former was under the command of the latter. Potter takes the proper office of the archiguberneta to have been, to manage the marine affairs, to provide commodious harbours, and order all things relating to the ſailing of the fleet, except what related to war.

ARCHIL, ARCHILLA, ROCELLA, ORSIELLE, is a whitiſh moſs which grows upon rocks, in the Canary and Cape de Verd iſlands, and yields a rich purple tincture, fugitive indeed, but extremely beautiful. This weed is imported to us as it is gathered. Thoſe who prepare it for the uſe of the dyer, grind it betwixt ſtones, ſo as to thoroughly bruiſe, but not to reduce it into powder; and then moiſten it occaſionally with a ſtrong ſpirit of urine, or urine itſelf mixed with quick-lime: in a few days it acquires a purpliſh red, and at length a blue colour. In the firſt ſtate it is called *Archil*; in the latter, *Lacmus* or *Litmaſe*.

The dyers rarely employ this drug by itſelf, on account of its dearneſs and the periſhableneſs of its beauty. The chief uſe they make of it is, for giving a bloom to other colours, as pinks, &c. This is effected by paſſing the dyed cloth or ſilk through hot water lightly impregnated with the archil. The bloom thus communicated ſoon decays upon expoſure to the air. Mr Hellot informs us, that by the addition of a little ſolution of tin, this drug gives a durable dye; that its colour is at the ſame time changed towards a ſcarlet; and that it is the more permanent in proportion as it recedes the more from its natural colour.

Archil
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Archilo-
chus.

Prepared archil very readily gives out its colour to water, to volatile ſpirits, and to ſpirit of wine; it is the ſubſtance principally made uſe of for colouring the ſpirits of thermometers. As expoſure to the air deſtroys its colour upon cloth, the excluſion of the air produces a like effect in theſe hermetically ſealed tubes, the ſpirits of large thermometers becoming in the compaſs of a few years colourleſs. M. l'Abbé Nollet obſerves (in the French Memoirs for the year 1742), that the colourleſs ſpirit, upon breaking the tube, ſoon reſumes its colour, and this for a number of times ſucceſſively; that a watery tincture of archil, included in the tubes of thermometers, loſt its colour in three days; and that, in an open deep veſſel, it became colourleſs at the bottom, while the upper part retained its colour. See *Colour-Making*.

A ſolution of archil in water, applied on cold marble, ſtains it of a beautiful violet or purpliſh blue colour, far more durable than the colour which it communicates to other bodies. M. du Fay ſays he has ſeen pieces of marble ſtained with it, which in two years had ſuffered no ſenſible change. It ſinks deep into the marble, ſometimes above an inch; and at the ſame time ſpreads upon the ſurface, unleſs the edges be bounded by wax or other like ſubſtances. It ſeems to make the marble ſomewhat more brittle.

Linnæus informs us, in the Swediſh Tranſactions for the year 1742, that the true archil moſs is to be found on the weſtern coaſts of England.

ARCHILOCHIAN, a term in poetry, applied to a ſort of verſes, of which Archilochus was the inventor, conſiſting of ſeven feet; the four firſt whereof are ordinarily dactyls, though ſometimes ſpondees; the three laſt trochees, as in Horace,

Solvitur acris hyems, grata vice veris et Favoni.

ARCHILOCHUS, a famous Greek poet and muſician, was, according to Herodotus, cotemporary with Candaules and Gyges, kings of Lydia, who flouriſhed about the 14th Olympiad, 724 years before Chriſt. But he is placed much later by modern chronologiſts; viz. by Blair 686, and by Prieſtley 660 years, before Chriſt.

He was born at Paros, one of the Cyclades. His father Teleſicles was of ſo high a rank, that he was choſen by his countrymen to conſult the oracle at Delphos concerning the ſending a colony to Thaſos: a proof that he was of one of the moſt diſtinguiſhed families upon the iſland. However, he is ſaid to have ſullied his birth by an ignoble marriage with a ſlave called *Enipo*, of which alliance our poet muſician was the fruit.

Though Archilochus ſhowed an early genius and attachment to poetry and muſic, theſe arts did not prevent his going into the army, like other young men of his birth; but in the firſt engagement at which he was preſent, the young poet, like Horace, and like our own Suckling, loſt his buckler, though he ſaved his life by the help of his heels. *It is much eaſier*, ſaid he, *to get a new buckler than a new exiſtence.* This pleaſantry, however, did not ſave his reputation; nor could his poetry or prayers prevail upon Lycambes, the father

Archilochus.

of his miſtreſs, to let him marry his daughter, though ſhe had been long promiſed to him. After theſe mortifications, his life ſeems to have been one continued tiſſue of diſgrace and reſentment.

Archilochum proprio rabies armavit iambo.
Hor. Art. Poet. 79.

Archilochus, with fierce reſentment warm'd,
Was with his own ſevere iambics arm'd. FRANCIS.

The *rage of Archilochus* was proverbial in antiquity; which compared the provoking this ſatiriſt to the treading upon a ſerpent: A compariſon not very ſevere, if it be true that Lycambes, and, as ſome ſay, his three daughters, were ſo mortified by his ſatire, as to be driven to the conſolation of a halter.

In this piece, many adventures are mentioned, full of defamation, and out of the knowledge of the public. There were likewiſe many looſe paſſages in it; and it is ſaid to have been on account of this ſatire that the Lacedemonians laid a prohibition on his verſes *.

*Val Max. lib. 6. c. 3.

However, according to Plutarch, there is no bard of antiquity by whom the two arts of poetry and muſic have been ſo much advanced as by Archilochus. To him is attributed particularly the ſudden tranſition from one rhythm to another of a different kind, and the manner of accompanying thoſe irregular meaſures upon the lyre. Heroic poetry, in hexameter verſe, ſeems to have been ſolely in uſe among the more ancient poets and muſicians; and the tranſition from one rhythm to another, which lyric poetry required, was unknown to them; ſo that if Archilochus was the firſt author of this mixture, he might with propriety be ſtyled the *Inventor of Lyric Poetry*, which, after his time, became a ſpecies of verſification wholly diſtinct from heroic.—To him is likewiſe aſcribed the invention of *Epodes*. See EPODE.

Our poet-muſician is generally ranked among the firſt victors at the Pythic games: and we learn from Pindar, that his muſe was not always a termagant; for though no mortal eſcaped her rage, yet ſhe was at times ſufficiently tranquil and pious to dictate hymns in praiſe of the gods and heroes. One in particular, written in honour of Hercules, acquired him the acclamations of all Greece; for he ſung it in full aſſembly at the Olympic games, and had the ſatisfaction of receiving from the judges the crown of victory conſecrated to real merit. This hymn, or ode, was afterwards ſung in honour of every victor at Olympia, who had no poet to celebrate his particular exploits.

Archilochus was at laſt ſlain by one Callondax Corax, of the iſland of Naxos; who, though he did it in fight, according to the laws of war, was driven out of the temple of Delphi, by command of the oracle, for having deprived of life a man conſecrated to the Muſes.

The names of Homer and Archilochus were equally revered and celebrated in Greece, as the two moſt excellent poets which the nation had ever produced. This appears from an epigram in the Anthologia; and from Cicero, who ranks him with poets of the firſt claſs, and in his Epiſtles tells us, that the grammarian Ariſtophanes, the moſt rigid and ſcrupulous critic of his time, uſed to ſay, that the laſt poem of Archilochus always appeared to him the moſt excellent.

ARCHIMAGUS, the high prieſt of the Perſian Magi or worſhippers of fire. He reſided in the Lighteſt fire temple; which was had in the ſame veneration with them as the temple of Mecca among the Mahometans. Zoroaſter firſt ſettled it at Balch; but when the Mahometans had overrun Perſia in the 7th century, the Archimagus was forced to remove from thence into Kerman, a province of Perſia, lying on the ſouthern ocean, where it hath continued to this day. Darius Hyſtaſpes took upon himſelf the dignity of Archimagus: for Porphyry tells us, he ordered before his death, that, among the other titles, it ſhould be engraven on his monument, that he had been *Maſter of the Magi*; which plainly implies that he had borne this office among them, for none but the Archimagus was maſter of the whole ſect. From hence it ſeems to have proceeded, that the kings of Perſia were ever after looked on to be of the ſacerdotal tribe, and were always initiated into the ſacred order of the Magi, before they took on them the crown, and were inaugurated into the kingdom.

ARCHIMANDRITE, in eccleſiaſtical hiſtory, was a name given by the ancient Chriſtians to what we now call an *abbot*. Father Simon obſerves, that the word *mandrite* is Syriac, and ſignifies a ſolitary monk.

ARCHIMEDES, one of the moſt eminent of the ancient mathematicians, was born at Syracuſe in Sicily, about the year 280 before the Chriſtian era. Hiero, king of Syracuſe, deemed it an honour to have this philoſopher for his relative and friend. Hiſtory does not inform us, to whom he was indebted for the rudiments of literature, but he flouriſhed about 50 years after Euclid. It is reported, that he was indebted to Egypt for much of his knowledge; but other accounts indicate, that he conferred more knowledge than he received from that celebrated nation; and, in particular, Diodorus mentions, that Egypt was indebted to him for the invention of the ſcrew-pump, for drawing off water. And the ſame author narrates, that he was the inventor of ſeveral other uſeful machines, which conveyed his fame to every quarter of the globe. The following paſſage from Livy, proves, that he was dexterous both for the inventing warlike machines, and alſo for his accurate obſervation of the heavenly bodies: "Unicus ſpectator cæli ſiderumque, mirabilior tamen inventor ac machinator bellicorum tormentorum," &c. lib. xxiv. It appears alſo, that in Cicero's time, he had become proverbial for his ſkill in ſolving problems. In a letter to Atticus, he informs him, that he is now freed from a difficulty, which he termed an Archimedian problem, lib. xiii. ep. 28.

It may perhaps be impoſſible diſtinctly to aſcertain the different inventions of this great man; but from the following paſſage, it appears that he formed a *glaſs ſphere*, or ſome kind of *planetarium*, which, with no ſmall degree of accuracy, repreſented the phenomena of the heavenly bodies. Hence ſays Claudian

Jupiter, in parvo cum cerneret æthera vitro,
Riſit, et ad ſuperos talia dicta dedit:

Huccine

Archimedes.

Huccine mortalis progreſſa potentia curæ?
Jam meus in fragile ludetur orbe labor.
Jura poli, rerumque fidem, legeſque deorum,
Ecce Syracoſius tranſtulit arti ſenex.
Incluſus variis famulatur ſpiritus aſtris,
Et verum certis motibus urget opus.
Percurrit proprium mentitus ſignifer annum.
Et ſimulata novo Cynthia menſe redit.
Jamque ſuum volvens audax induſtria mundum
Gaudet, et humana ſidera mente regit.
Quid falſo inſontem tonitru Salmonea miror?
Emula naturæ parva reperta manus.

" When in a glaſs's narrow ſphere confin'd,
Jove ſaw the fabric of th' Almighty mind;
He ſmil'd, and ſaid, ' Can mortals art alone
Our heav'nly labours mimic with their own?
The Syracuſan's brittle work contains
Th' eternal law that through all nature reigns.
Fram'd by his art, ſee ſtars unnumber'd burn,
And in their courſes rolling orbs return;
His ſun, through various ſigns deſcribe the year,
And every month his mimic moons appear.
Our rival's laws his little planets bind,
And rule their motions by a human mind:
Salmoneus could our thunder imitate;
But Archimedes can a world create."

In the following lines the ſame machine is mentioned by Ovid.

Arte Syracoſia ſuſpenſus in aëre clauſo,
Stat globus, immenſi parva figura poli.

Ovid, Faſt. vi. 277.

Vitruvius mentions a fact, which proves Archimedes's knowledge in the doctrine of ſpecific gravity. Hiero, the king, having given a certain quantity of gold wherewith to make a golden crown, and ſuſpecting that the workmen had ſtolen part of the gold and ſubſtituted ſilver in its ſtead, he applied to Archimedes to employ his ingenuity in detecting the fraud. Ruminating upon this ſubject when he was bathing himſelf, he obſerved, that he diſlodged a quantity of water, correſponding to the bulk of his own body; therefore, inſtantly quitting the bath with all the eagerneſs natural to an inventive mind upon a new diſcovery, he run into the ſtreets naked, crying, Ευρηκα! Ευρηκα! *I have found it out! I have found it out!* Then taking one maſs of gold and another of ſilver, each equal in weight to the crown; he carefully obſerved the quantity of fluid which they alternately diſplaced, when introduced in the ſame veſſel full of water. Next he aſcertained how much water was diſplaced by the crown when put into the ſame veſſel full of water; and, upon comparing the three quantities together, he aſcertained the exact proportions of gold and ſilver, of which the crown was compoſed.

Archimedes was well acquainted with the mechanical powers. His celebrated ſaying with regard to the power of the lever has been often repeated, " Give me a place to ſtand upon, and I will move the earth." In order to ſhew Hiero the effect of mechanical powers, it is ſaid, that aided by ropes and pulleys, he drew towards him a galley, which lay on the ſhore manned and loaded: but the diſplays of his mechanical ſkill mentioned by Marcellus at the ſiege of Syracuſe, were long deemed almoſt incredible; until the after improvements in mechanics have demonſtrated them practicable. He haraſſed the veſſels of the beſiegers, both when they approached and kept at a diſtance from the city. When they approached, he ſunk them by means of long and huge beams of wood; or, by means of grappling hooks placed at the extremity of levers, he hoiſted up the veſſels into the air, and daſhed them to pieces either againſt the walls or the rocks. When the enemy kept at a diſtance, he employed machines which threw from the walls ſuch a quantity of ſtones, as ſhattered and deſtroyed their veſſels. In ſhort, his mechanical genius ſupplied ſtrength and courage to the city, and filled the Romans with aſtoniſhment and terror. Until Buffon invented and framed a burning glaſs, compoſed of about 400 glaſs planes, capable of ſetting fire to wood at the diſtance of 200 feet, and of melting lead and tin at the diſtance of 120 feet, and ſilver at the diſtance of 50; the account of Archimedes's inſtrument for burning ſhips at a great diſtance by means of the rays of the ſun, was deemed fabulous and impoſſible. Archimedes.

But, however eminent for mechanical invention, he was ſtill more eminent for the inveſtigation of abſtract truths; and the formation of concluſive demonſtrations in the branches of pure geometry. Plutarch alſo mentions, that Archimedes himſelf eſteemed mechanical invention greatly inferior in value to thoſe ſpeculations which convey irreſiſtible conviction to the mind. His geometrical works afford numerous proofs of his ſucceſs in this field of ſcience. It is reported, that he was often ſo deeply engaged in mathematical ſpeculations, as both to neglect his food and the care of his perſon; and at the bath he would ſometimes draw geometrical figures in the aſhes, and ſometimes upon his own body when it was anointed, according to the cuſtom of that time. He valued himſelf ſo much upon the diſcovery of the ratio between the ſphere and the containing cylinder, that, indifferent to all his other inventions, he ordered his friends to engrave upon his tomb a cylinder containing a ſphere, with an inſcription explanatory of its nature and uſe.

It muſt be extremely painful to every humane mind, but particularly to every lover of philoſophic merit, to learn, that when Syracuſe was taken by ſtorm, he, being ignorant of that fact, was run through the body, when engaged in drawing a geometrical figure upon the ſand. As Marcellus had given expreſs orders that both his perſon and his houſe ſhould be held ſacred; this appears to have happened through ignorance, and therefore removes a great part of the odium from the Roman name. This mournful event happened in the 142d Olympiad, or 212 years before the Chriſtian era. Marcellus, in the midſt of his triumphal laurels, lamented the death of Archimedes, conferred upon him an honourable burial, and took his ſurviving relations under his protection; but greater honour was conferred upon him when the philoſopher of Arpinum, 140 years after, went in ſearch of his long-neglected tomb. Hence, ſays Cicero, " I diligently ſought to diſcover the ſepulchre of Archimedes, which the Syracuſans had totally neglected, and ſuffered to be overgrown with thorns and briars. Recollecting ſome verſes, ſaid to be inſcribed on the tomb, which mentioned, that on the top was placed a ſphere with a cylinder,

Archimedes. looked round me upon every object at the Agrigentine gate, the common receptacle of the dead. At last I observed a little column which just rose above the thorns, upon which was placed the figure of a sphere and cylinder. 'This, said I to the Syracusan nobles who were with me, This must, I think, be what I am seeking.' Several persons were immediately employed to clear away the weeds, and lay open the spot. As soon as a passage was opened, we drew near, and found on the opposite base the inscription, with nearly half the latter part of the verses worn away. Thus would this most famous, and formerly most learned, city of Greece have remained a stranger to the tomb of one of its most ingenious citizens, had it not been discovered by a man of Arpinum."

Several works of this most celebrated mathematician have escaped the wreck of time. Of abstract geometry we have a treatise "on the Sphere and Cylinder," another "on the Dimension of the Circle, or the Proportion between the Diameter and the Circumference; on Obtuse Conoids and Spheroids; on Spiral Lines; and on the Quadrature of the Parabola." Of his mechanics Archimedes has left a "Treatise on Equiponderants, or Centres of Gravity;" and in hydrostatics, a "Treatise concerning Bodies floating on Fluids;" and a geometrical piece, entitled *Assumpta* or *Lemmata*. His other works are either lost or remain unpublished. (*Gen. Biog.*)

ARCHIPELAGO, in *Geography*, a general term signifying a sea interrupted with islands; it is however more especially applied to that lying between Europe and Asia, which contains the islands anciently called *Cyclades* and *Sporades*. See these two words. Archi-pelago.

ARCHIPHERACITÆ, ministers in the Jewish synagogues appointed to read and interpret the Perakim, or titles and heads of the law and the prophets.

ARCHPRESBYTER, or ARCH-PRIEST, a priest established in some dioceses with a superiority over the rest. He was anciently chosen out of the college of presbyters at the pleasure of the bishop. These archpresbyters were of much the same nature with deans in the cathedral churches, as the college of presbyters answers to the chapter. See PRESBYTER.

ARCHISYNAGOGUS, the chief of the synagogue; the title of an officer among the Jews, who presided in their synagogues and assemblies. The number of these officers was not fixed, nor the same in all places; there being 70 in some, and in others only one. They are sometimes called *princes* of the synagogue, and had a power of excommunicating such as deserved that punishment.

ARCHITECT, a person skilled in architecture, or the art of building; who forms plans and designs for edifices, conducts the work, and directs the several artificers employed in it. The word is derived from ἀρχος, *princeps*, and τεκτων, *faber*, "workman;" q. d. the principal workman.

ARCHITECTURE,

IN the utmost latitude of the word, signifies the art of building in general; but the term is most frequently applied only to the construction of such buildings as are necessary for the purposes of civil life, such as houses, churches, halls, bridges, porticos, &c.

History of Architecture.

THE origin of this art, like that of most others, is totally unknown. We are assured, however, that it is as old as Cain: for Moses tells us that he built a city; though what were the materials, or how the buildings were constructed, we are entirely ignorant. It is commonly said, that the first materials employed in building were branches and twigs of trees, wherewith men constructed huts; such as the *wigwams* in use among the American Indians at present. This, however, appears disputable. The natural shelter afforded by hollows in the sides of mountains or rocks, it may be supposed, would much more readily suggest the idea of using stones and earth as materials for building houses. Indeed, considering that tents were not invented before the days of Jabal, Tubal Cain's brother, it is very probable that such temporary houses as the Indian wigwams were not originally known; otherwise the method of covering poles with the skins of beasts, instead of small branches or twigs, must very soon have taken place. These temporary houses seem to have come into use only when men began to lead an idle wandering life, like the Tartars, and could not be at the trouble of constructing durable habitations in every place where they were obliged to wander with their cattle; and Jabal perhaps from them took the hint of making portable houses or tents. Accordingly we see, that no nations, except those who are in a perpetually unsettled state, make use of such wretched materials. Even in America, where the human race has appeared in the rudest form, they were no sooner collected into great bodies under the emperors of Mexico and Peru, than stone buildings began to be erected. 1 Materials first used in building.

We are not, therefore, to look for the origin of architecture in any single nation; but in every nation, when the inhabitants began to leave off their savage way of life, and to become civilized: and if there is any nation to be found which hath been always in a civilized state, we may be assured that architecture hath always had an existence there. But whatever may be in this, the origin of regular buildings hath been deduced from the construction of the meanest huts in a very natural and plausible manner by several authors. "Anciently (says Vitruvius) men lived in woods, and inhabited caves; but in time, taking perhaps example from birds, who with great industry build their nests, they made themselves huts. At first they made these huts, very probably, of a conic figure; because that is a figure of the simplest structure; and, like the birds, whom they imitated, composed them of branches of trees, spreading them wide at the bottom, and join- 2 Primitive huts Plate XXXVII fig. 1.

ing them in a point at the top; covering the whole with reeds, leaves, and clay, to ſcreen them from tempeſts and rain.

3 Their improvement.

"But finding the conic figure inconvenient on account of its inclined ſides, they changed both the form and conſtruction of their huts, giving them a cubical figure, and building them in the following manner: Having marked out the ſpace to be occupied by the hut, they fixed in the ground ſeveral upright trunks of trees to form the ſides, filling the intervals between them with branches cloſely interwoven and covered with clay. The ſides being thus completed, four large beams were placed on the upright trunks; which, being well joined at the angles, kept the ſides firm, and likewiſe ſerved to ſupport the covering or roof of the building, compoſed of many joiſts, on which were laid ſeveral beds of reeds, leaves, and clay.

Fig. 2.

"Inſenſibly mankind improved in the art of building, and invented methods to make their huts laſting and handſome as well as convenient. They took off the bark, and other unevenneſſes, from the trunks of trees that formed the ſides; raiſed them, probably above the dirt and humidity, on ſtones; and covered each of them with a flat ſtone or ſlate, to keep off the rain. The ſpaces between the ends of the joiſts were cloſed with clay, wax, or ſome other ſubſtance; and the ends of the joiſts covered with thin boards cut in the manner of triglyphs. The poſition of the roof was likewiſe altered: for being, on account of its flatneſs, unfit to throw off the rains that fell in great abundance during the winter ſeaſon, they raiſed it in the middle; giving it the form of a gable roof, by placing rafters on the joiſts, to ſupport the earth and other materials that compoſed the covering.

Fig. 3.

"From this ſimple conſtruction the orders of architecture took their riſe. For when buildings of wood were ſet aſide, and men began to erect ſolid and ſtately edifices of ſtone, they imitated the parts which neceſſity had introduced into the primitive huts; inſomuch that the upright trees, with the ſtones at each end of them, were the origin of columns, baſes, and capitals, and the beams, joiſts, rafters, and ſtrata of materials that formed the covering, gave birth to architraves, friezes, triglyphs, and cornices, with the corona, the mutules, the modillions, and the dentils.

"The firſt buildings were in all likelihood rough and uncouth; as the men of thoſe times had neither experience nor tools: but when, by long experience and reaſoning upon it, the artiſts had eſtabliſhed certain rules, had invented many inſtruments, and by great practice had acquired a facility in executing their ideas, they made quick advances towards perfection, and at length diſcovered certain manners of building, which ſucceeding ages have regarded with the higheſt veneration."

4 State of architecture among the Egyptians.

Among the ancient Egyptians, Aſſyrians, and Perſians, this art was carried to an incredible length. The pyramids of Egypt are ſuch ſtructures as would exceed the power of the moſt potent monarch on earth to raiſe at this day. The largeſt of theſe, according to the account of M. Goguet, is near 500 feet high, and contains 313,290 ſolid fathoms. It is compoſed of ſtones enormouſly large; many of them being 30 feet long, four feet high, and three in breadth; and all this huge maſs of building was coated over with ſquare flags of marble.—The ſtructure called the *labyrinth*, in the ſame country, according to Herodotus, who ſaw it, excelled every thing which he could have conceived from the imagination either of himſelf or others. Within the ſame circuit of walls they had enclоſed 3000 halls, 12 of which were of a ſingular form and beauty; and of theſe, half were above, and half below ground; and the whole was terminated by a pyramid 40 fathoms high. All this prodigious maſs of building was compoſed of white marble, and the walls were adorned with engravings.—The obeliſks were not leſs aſtoniſhing; the largeſt of them being entire pieces of granite, no leſs than 180 feet high.—Near Andera, in Upper Egypt are the ruins of a palace of gray granite, the ceilings of which are ſupported by columns of ſuch thickneſs, that four men can ſcarcely fathom them. The ceilings themſelves are compoſed of ſtones of the ſame kind, ſix or ſeven feet in breadth and 18 feet in length. The grand hall is 112 feet long, 60 high, and 58 broad. The roof of the whole edifice is a terrace, on which the Arabs formerly built a very large village, the ruins of which are ſtill viſible.

5 Among the Babylonians and Perſians.

Among the Babylonians and Perſians, too, ſuch immenſe piles of building have been raiſed, as appear utterly inconceivable and incredible to many modern authors where their former grandeur is not demonſtrable by ruins viſible at this day. The ruins of Perſepolis, the ancient capital of Perſia, were ſo ſtupendous in the time of Avicenna the Arab phyſician, that his countrymen could not believe ſuch ſtructures poſſible to be erected but by evil ſpirits. Of their extraordinary magnificence, indeed, we may have ſome idea from the account of the ſtaircaſes belonging to the palace. The remains, ſome time ago, conſiſted of 95 ſteps of white marble, ſo broad and flat, that 12 horſes might conveniently go up abreaſt.

6 Their buildings more remarkable for greatneſs than elegance.

In theſe vaſt ſtructures, however, the nations of whom we ſpeak ſeem to have regarded the greatneſs, rather than the elegance or uſefulneſs of their works. In the pyramids and obeliſks of Egypt this is exceedingly conſpicuous; but whether it was ſo in the labyrinth or in the palace at Thebes above mentioned, it is impoſſible to determine, unleſs the buildings were entire, and we knew for what purpoſe they had been deſigned. If the kings who built the pyramids deſigned to immortalize their memories by building, they certainly could not have fallen upon any thing more proper for this purpoſe; though even in this they have ſomehow or other failed, the names of thoſe who erected them not being certainly known even in the time of Herodotus.

7 Ignorant of the uſe of arches.

It is certain, however, that neither the ancient Aſſyrians nor Babylonians knew the method of conſtructing arches. The roofs of all their halls were flat, and covered with prodigiouſly large ſtones, ſome of them ſo big as to cover a whole room ſingly. Their manner of building was alſo quite deſtitute of what is now called *taſte*; the columns were ill proportioned, and their capitals executed in the pooreſt manner imaginable. This was obſerved by the Greeks, who improved upon the proportions formerly uſed, and were the inventors of three of the five orders of architecture, viz. the Doric, Ionic, and Corinthian.

8 and of proportioning columns.

"Anciently (ſays Vitruvius) they were ignorant of the art of proportioning the various parts of a building: they uſed columns; but they cut them at hazard, without rules,

without

without principles, and without having any attention to the proportions which they ought to give them: they placed them likewiſe without any regard to the other parts of the edifice. Dorus, ſon of Helen and grandſon of Deucalion, having cauſed a temple to be built at Argos in honour of Juno, that edifice was found by chance to be conſtructed according to the taſte and proportions of the order which afterwards they called *Doric*. The form of this building having appeared agreeable, they conformed to it in the conſtruction of edifices which they afterwards had to build.

9 Origin of the Doric order.

"About the ſame time, the Athenians ſent into Aſia a colony under the conduct of Ion, nephew of Dorus: this undertaking had very good ſucceſs. Ion ſeized on Caria, and there founded many cities: theſe new inhabitants thought to build temples. They propoſed for a model that of Juno at Argos; but, ignorant of the proportion which they ought to give to the columns, and in general to the whole edifice, they ſought for rules capable of regulating their operation. Theſe people wanted, in making their columns ſufficiently ſtrong to ſupport the whole edifice, to render them at the ſame time agreeable to the ſight. For this purpoſe, they thought to have given it the ſame proportion that they found between the foot of a man and the reſt of his body. According to their ideas, the foot made a ſixth part of the human height: in conſequence, they gave at firſt to a Doric column, taking in its chapiter, ſix of its diameters; that is to ſay, they made it ſix times as high as it was thick: afterwards they added to it a ſeventh diameter.

10 Of the Ionic.

"This new order of architecture was not long in giving birth to a ſecond: they would immediately go beyond their firſt invention. The Ionians tried to throw ſtill more delicacy and elegance into their edifices. They employed the ſame method which they had before put in practice for the compoſition of the Doric order: but inſtead of taking for a model the body of a man, the Ionians were regulated by that of a woman. With a view to make the columns of this new order more agreeable and more pleaſing, they gave them eight times as much height as they had diameter. They alſo made channelings all along the trunk, to imitate the folds of the robes of women: the volutes of the chapiter repreſented that part of the hair which hung in curls on each ſide of the face. The Ionians added, laſtly, to theſe columns a baſe, which was not in uſe in the Doric order." According to Vitruvius, theſe baſes were made in the manner of twiſted cords, as a kind of caſe for the columns. This order of architecture was called *Ionic*, from the name of the people who had invented it.

Such is the account given by Vitruvius of the origin of improvements in the proportion of columns. Had theſe improvements, however, exiſted in ſuch early times, Homer, who was greatly poſterior to them, would certainly have made mention of ſomething of that kind; but in all his writings he gives us no account of any thing like columns of ſtone, but uſes a word which would rather incline us to think that his columns were nothing more that bare poſts.

11 Hints of improvement probably taken from Solomon's temple.

It is remarkable, that improvements in architecture did not take place in any nation till after, or about, the time that Jeruſalem was taken by Nebuchadnezzar. The grandeſt buildings erected among the Aſſyrians ſeem to have owed their exiſtence to this monarch; and it can ſcarce be imagined that he would not endeavour to imitate the architecture of Solomon's temple, to which, by his conqueſt of Jeruſalem he had ſo eaſy an acceſs. It is alſo remarkable, that the dimenſions of the two pillars, Jachin and Boaz, ſet up by Solomon, very nearly correſpond with thoſe of the Doric order, firſt invented by the Greeks, and which originally came from their colonies ſettled in Aſia Minor. The height of Solomon's pillars, without the chapiter, was 18 cubits; that of the chapiter itſelf was five cubits; the circumference was 12 cubits; from whence, according to the Scripture language, we may reckon the diameter to have been exactly four cubits. Had they been a ſingle cubit higher, they would have been preciſely of the ſame height with columns of the original Doric order. We do not indeed mean to aſſert, that this famous temple gave a model of architecture to the whole world; although it is ſcarce conceivable but imitations of it, as far as it could be known, muſt have taken place among many nations.

12 Egyptian banqueting rooms deſcribed.

Notwithſtanding all their defects, however, the Egyptian buildings undoubtedly had an air of vaſt grandeur and magnificence, if we may credit the deſcription given of one their banqueting rooms by Vitruvius. The uſual ſize of one of theſe rooms was from 100 to 150 feet in length, and its breadth ſomewhat more than half its length. At the upper end, and along the two ſides, they placed rows of pillars tolerably well proportioned to one another, though not of any regular order; and at the lower part they made a magnificent and ſpacious entrance: this, with is ornaments, ſeems to have taken up one end of the building entire. We are not told that there were any pillars there; though perhaps they placed two or more toward the angles on each ſide, for uniformity, the central ſpace being enough for an entrance in the grandeſt and moſt auguſt manner. Theſe rows of columns were ſet at a diſtance from the wall, forming a noble portico along the two ſides and upper end of the building. Upon the pillars was laid an architrave; and from this was carried up a continued wall with three quarter columns, anſwering directly to thoſe below, and in proportion one fourth ſmaller in all their parts. Between theſe three quarter columns were placed the windows for enlightening the building. From the tops of the lower pillars to the wall was laid a floor; this covered the portico overhead within, and made on the outſide a platform, which was ſurrounded by a corridor with rails and balluſters. This was terraced, and ſerved as a plain for people to walk on; and from this they could look through the windows down into the room. To this terrace there was no covering required, as the Egyptians were in no fear of rain. The Egyptians decorated this ſort of building with ſtatues; and no kind of ornament could anſwer it ſo well, as the light cannot fall upon ſtatues to ſuch advantage in any direction, as when it comes from above, in ſuch a regular, proportioned, and uninterrupted manner.

13 Ancient architecture ſuperior in grandeur to the modern.

We have already taken notice, that among the ancient Egyptians, Perſians, and Babylonians, the vaſt ſtrength and extent of their buildings ſeems to have been what they chiefly valued; and in this they certainly as much excelled the Greeks and modern nations,

as the latter excel them in the beautiful proportion and elegance of their ſtructures. There are not wanting, however, ſome modern authors, who endeavour to deprive the ancients of what is juſtly their due, and will have every thing to be exaggerated which ſeems beyond the power of modern princes to accompliſh. In this way M. Goguet remarkably diſtinguiſhes himſelf; and that without giving any reaſon at all, but merely that he takes it into his head. Speaking of the wonders of ancient Babylon, "All theſe works (ſays he), ſo marvellous in the judgment of antiquity, appear to me to have been extremely exaggerated by the authors who have ſpoken of them. How can we conceive, in effect, that the walls of Babylon could have been 318 feet high and 81 in thickneſs, in a compaſs of near ten leagues?" To this we may eaſily reply, that the pyramids of Egypt, and the immenſe wall which divides China from Tartary, ſhow us, that even ſuch a work as the wall of ancient Babylon is ſaid to have been is not altogether incredible. The loweſt computation of the dimenſions of the Chineſe wall is, that it extends in length 1200 miles, is 18 feet high at a medium and as many thick; according to which computation, it muſt contain 9,504,000 ſolid fathoms; and yet, if we may credit the Chineſe hiſtorians, this immenſe maſs of building was finiſhed in five years. If therefore we can ſuppoſe Nebuchadnezzar, or whoever fortified the city of Babylon, to have been capable of employing as many men for 10 years as were employed in raiſing the Chineſe wall, we may ſuppoſe him able to have fortified the city of Babylon as ſtrongly as it is ſaid to have been; for the maſs of building is not quite double that of the Chineſe wall, though nearly ſo, amounting to 18,189,600 ſolid fathoms. When our author afterwards gaſconades about the works of the French king, it is difficult to avoid laughter at hearing him declare, that "infinitely more money has been expended, and much more genius required, as well as more power, taſte, and time, to finiſh Verſailles, with all its defects, than to conſtruct a pyramid, or erect an obeliſk." The genius, taſte, and time, we ſhall not diſpute; but as the ſame author confeſſes that 100,000 men were employed for 30 years together in the conſtruction of the largeſt pyramid, we think the power may juſtly be doubted. This doubt will appear ſtill the more reaſonable, when we conſider what time the above-mentioned number of men would have taken to accompliſh ſome of the works of which M. Goguet boaſts ſo much. The canal of Languedoc, he tells us, extends in length upwards of 70 leagues, and required the removal of two millions of cubic fathoms of earth. This was no doubt a great work; but had 100,000 men been employed upon it at once, they muſt have removed this quantity of earth in three weeks, ſuppoſing each to have removed only a ſingle fathom a-day. Nor can we imagine, that any modern work will at all ſtand in competition with the works of the ancients as to greatneſs, whatever they may do in other reſpects.

14 Architecture improved by the Greeks.

As to the improvements in architecture, the Greeks were undoubtedly the firſt European nation who began to diſtinguiſh themſelves in this way. Whence they took the firſt hint of improvement, we have no means of knowing: though, as we have already hinted, it is ſcarce credible but that Solomon's temple muſt have ſomewhat contributed thereto; eſpecially as we learn from Scripture, that the capitals of the columns there were ornamented in the richeſt manner. The origin of the Doric and Ionic orders we have already given an account of from Vitruvius; to which we may add, that the volutes, which are the peculiar ornament of the Ionic capital, are by ſome ſaid to repreſent the natural curling down of a piece of bark from the top of a beam, which is ſuppoſed to have been the firſt kind of column. The Corinthian order was not invented till long after the others, and is ſaid to have taken its riſe from the following accident: A baſket had been ſet upon the ground, and covered with a ſquare tile; there grew near it a plant of acanthus or bear's breech; the leaves ſhot up and covered the outer ſurface of the baſket; and, as the ſtalks roſe up among them, they ſoon reached the tile which overhung the edges of the baſket at the top; this ſtopping their courſe upwards, they curled and twiſted themſelves into a kind of volutes. In this ſituation a ſculptor, Callimachus, ſaw it; the twiſted part of the ſtalk repreſented to him the volutes of the Ionic capital, which, as they were here ſmaller, and more numerous, appeared in a new form: he ſaw the beauty of raiſing them among leaves, and was ſtruck with the repreſentation of a noble and lofty capital; which being afterwards put into execution, has been univerſally admired. 15 Origin of the Corinthian order.

In their private houſes the Greeks had greater conveniences, but much leſs magnificence, than the Romans; as the former reſerved the uſe of their grandeſt architecture for their temples and public buildings. The entrance to their private houſes, however large they were, was always ſmall, narrow, and plain. The whole edifice uſually conſiſted of two courts, and ſeveral ranges of buildings. The porter's lodge, if ſuch a phraſe may be allowed, was uſually on the right hand of this narrow entrance, and oppoſite to this were the ſtables. From this entrance one came into the firſt or ſmaller court. This had piazzas on three ſides; and on the fourth, which was uſually the ſouth ſide, there were butments of pilaſters, which ſupported the more inward parts of the ceiling. A ſpace being thus left between the one and the other, they had places for the lodgings of men and maid ſervants, and ſuch as had the principal care of the houſe. Upon the ſame floor with theſe butments they had ſeveral regular apartments, conſiſting of an antichamber, a chamber, and cloſets; and about the piazzas, rooms for eating and other common purpoſes. Oppoſite to the entrance was a lobby or veſtibule, through which lay the paſſage into the ſeveral rooms; and through this, in front, one entered a large paſſage, which led into the larger or principal ſquare. Round this they had four piazzas, which, in the common way of building, were all of one height; but, in more magnificent houſes, they made that which faced the great entrance loftier, and every way nobler, than the other three. A nobleman of Rhodes added this to the common method of building; and it was thence called the *Rhodian* manner. In this more noble part of the building were the apartments of the family. Theſe were adorned with lofty galleries, and here were the beſt rooms: they were called the *men's apartments;* for, in rude times, the Greeks lodged their wives and female relations in the beſt rooms of the firſt court, where they had alſo their ſeparate and detached place. 16 Private houſes of the Greeks.

The

The two ſides of this larger court were kept for the reception of viſitors; and ſervants were appointed to wait upon them. The maſter of the houſe entertained his gueſts the firſt day in his own apartments; but after this, how long ſoever they ſtaid, they lived without reſtraint in one of thoſe ſeparate piazzas, and joined the family only when they choſe it. Thus was the upper end and two ſides of the great court diſpoſed of; and its lower end, being the ſame range of building that was the upper end of the firſt court, held the lady of the houſe and her female friends.

17 Of the Romans. The Romans borrowed their architecture from the Greeks, but did not imitate them in the modeſty of their private dwellings. They placed the principal front of their houſe towards the ſouth, and on this they beſtowed all the decoration of expenſive ornament. They had here lofty galleries and ſpacious rooms, and every thing carried an air of greatneſs and ſhow. In their country houſes, they preſerved the ſame ſituation and the ſame front, but the inner diſtribution was different. At the entrance they placed the meaner and more offenſive offices, after the manner of the Greeks. The firſt gallery, which received the ſtranger at his entrance, had on one ſide a paſſage to the kitchen, and on the other to the ſtalls where they kept cattle, that their noiſe or ſmell might not be offenſive within, while yet they were in readineſs for all ſervices. Theſe ſtalls were placed to the left, as in the Greek houſes; on the right was the kitchen, which had its light from above, and its chimney in the middle. Farther within the building were placed on one ſide bathing rooms, and on the other family conveniences, in the manner of our butteries and ſtore rooms: the bathing rooms were on the left, and the others on the right. Backwards, and full to the north, they placed their cellars, for fear of the ſun, and over theſe were other ſtore rooms. From this part of the ſtructure one came into the court; for in theſe there generally was only one court: this was taken up by ſervants, and thoſe who had the care of the cattle; and on each ſide there were ſtalls for the cattle. In front from the entrance, but very far from all theſe annoyances, ſtood the nobler apartments for the maſter of the family.

18 Decline of the art among the Romans. How magnificent the Romans were in their temples and public buildings, is yet to be ſeen in what remains of them, and which are not only models for all modern architects, but have never been ſurpaſſed or even equalled to this day. But though the art of architecture continued almoſt at its higheſt pitch among the Romans for two centuries, it declined exceedingly as the empire began to fail. Tacitus relates, that after the battle of Actium no men of genius appeared; and after the reign of Alexander Severus, a manner of building altogether confuſed and irregular was introduced, wherein nothing of the true graces and majeſty of the former was preſerved. When the empire was entirely overrun by the Goths, the conquerors naturally introduced their own method of building. Like the ancient Egyptians, the Goths ſeem to have been more ſtudious to amaze people with the greatneſs of their buildings, than to pleaſe the eye with the regularity of their ſtructure, or the propriety of their ornaments. They corrected themſelves, however, a little by the models of the Roman edifices which they ſaw before them: but theſe models themſelves were faulty; and the Goths being totally deſtitute of genius, neither architecture nor any other art could be improved by them.

19 Gothic manner of building. Moſt writers who mention the ancient buildings in this iſland, particularly the religious ones, notwithſtanding the ſtriking difference in the ſtyles of their conſtruction, claſs them all under the common denomination of *Gothic*; a general appellation by them applied to buildings not exactly conformable to ſome one of the five orders of architecture. Our modern antiquaries, more accurately, divide them into Saxon, Norman, and Saracenic, or that ſpecies vulgarly, though improperly, called *modern Gothic*.

20 Of the Saxon and Norman ſtyles. It has been maintained by ſome, that the Saxon churches, after they began to be built with ſtone, conſiſted only of upright walls, without pillars or arches, the conſtruction of which, it is alleged, they were entirely ignorant of. But this opinion is not only contradicted by the teſtimony of ſeveral cotemporary or very ancient writers, who expreſsly mention them both, but alſo by the remains of ſome edifices univerſally allowed to be of Saxon workmanſhip, one of them the ancient conventual church at Ely. Indeed, it is highly improbable that the Saxons could be ignorant of ſo uſeful a contrivance as the arch. Many of them, built by the Romans, they muſt have had before their eyes; ſome of which have reached our days: two particularly are now remaining in Canterbury only; one in the caſtle yard, the other at Riding gate. And it is not to be believed, that once knowing them and their convenience, they would neglect to make uſe of them; or having uſed, would relinquiſh them. Beſides, as it appears from undoubted authorities they procured workmen from the continent to conſtruct their capital buildings "according to the Roman manner," this alone would be ſufficient to confute that ill-grounded opinion; and at the ſame time proves, that what we commonly call *Saxon*, is in reality Roman architecture.

This was the ſtyle of building practiſed all over Europe; and it continued to be uſed by the Normans, after their arrival here, till the introduction of what is called the *modern Gothic*, which was not till about the end of the reign of Henry II. ſo that there ſeems to be little or no grounds for a diſtinction between the Saxon and Norman architecture. Indeed it is ſaid, the buildings of the latter were of larger dimenſions both in height and area; and they were conſtructed with a ſtone brought from Caen in Normandy, of which their workmen were peculiarly fond: but this was ſimply an alteration in the ſcale and materials, and not in the manner of the building. The ancient parts of moſt of our cathedrals are of this early Norman work.—The characteriſtic marks of this ſtyle are theſe: the walls are very thick, generally without buttreſſes; the arches, both within and without, as well as thoſe over the doors and windows, ſemicircular, and ſupported by very ſolid, or rather clumſy, columns, with a kind of regular baſe and capital: in ſhort, plainneſs and ſolidity conſtitute the ſtriking features of this method of building. Nevertheleſs, the architects of thoſe days ſometimes deviated from this rule: their capitals were adorned with carvings of foliage, and even animals; and their maſſive columns decorated with ſmall half columns united to them, and

their ſurfaces ornamented with ſpirals, ſquares, lozenge net-work, and other figures, either engraved or in relievo. Various inſtances of theſe may be ſeen in the cathedral of Canterbury, particularly the under croft, the monaſtery at Lindisfarn or Holy Iſland, the cathedral at Durham, and the ruined choir at Orford in Suffolk. The columns 1, 1, 1, 1, (Plate XXXVIII.), are at the monaſtery of Lindisfarn or Holy Iſland. Thoſe 2, 2, 2, belong to the ruined chancel at Orford in Suffolk. N° 3 is at Chriſt church, Canterbury. N° 4, a column with two remarkable projections like claws, in the ſouth aiſle of Romney church, Hampſhire.

21 Of the modern Gothic or Saracenic ſtyle.

To what country or people the *modern Gothic*, or the ſtyle of building with pointed arches ſo called, owes its origin, ſeems by no means ſatisfactorily determined. Some have imagined it may poſſibly have taken its riſe from thoſe arcades we ſee in the early Norman or Saxon buildings or walls, where the wide ſemicircular arches croſs and interſect each other, and form at their interſection a narrow and ſharp-pointed arch: But it is more generally conjectured to be of Arabian extraction, and to have been introduced into Europe by ſome perſons returning from the Cruſades in the Holy Land. Sir Chriſtopher Wren was of that opinion, and it has been ſubſcribed to by moſt writers who have treated on this ſubject.

"Modern Gothic, as it is called (ſays Rious), is diſtinguiſhed by the lightneſs of its work, by the exceſſive boldneſs of its elevations and of its ſections; by the delicacy, profuſion, and extravagant fancy of its ornaments. The pillars of this kind are as ſlender as thoſe of the ancient Gothic are maſſive; ſuch productions, ſo airy, cannot admit the heavy Goths for their author. How can be attributed to them a ſtyle of architecture, which was only introduced in the tenth century of our era, ſeveral years after the deſtruction of all thoſe kingdoms which the Goths had raiſed upon the ruins of the Roman empire, and at a time when the very name of Goth was entirely forgotten? From all the marks of the new architecture, it can only be attributed to the Moors; or, what is the ſame thing, to the Arabians or Saracens, who have expreſſed, in their architecture, the ſame taſte as in their poetry; both the one and the other falſely delicate, crowded with ſuperfluous ornaments, and often very unnatural: the imagination is highly worked up in both; but it is an extravagant imagination; and this has rendered the edifices of the Arabians (we may include the other orientals) as extraordinary as their thoughts. If any one doubts of this aſſertion, let us appeal to any one who has ſeen the moſques and palaces of Fez, or ſome of the cathedrals in Spain built by the Moors; one model of this ſort is the church at Burgos; and even in this iſland there are not wanting ſeveral examples of the ſame. Such buildings have been vulgarly called modern Gothic, but their true appellation is Arabic, Saracenic, or Moreſque.—This manner was introduced into Europe through Spain. Learning flouriſhed among the Arabians all the time that their dominion was in full power; they ſtudied philoſophy, mathematics, phyſic, and poetry. The love of learning was at once excited; in all places that were not at too great a diſtance from Spain, theſe authors were read: and ſuch of the Greek authors as they had tranſlated into Arabic, were from thence turned into Latin. The phyſic and philoſophy of the Arabians ſpread themſelves in Europe, and with theſe their architecture: many churches were built after the Saracenic mode; and others with a mixture of heavy and light proportions, the alteration that the difference of the climate might require, was little, if at all conſidered. In moſt ſouthern parts of Europe, and in Africa, the windows (before the uſe of glaſs), made with narrow apertures, and placed very high in the walls of the building, occaſioned a ſhade and darkneſs within ſide, and were all contrived to guard againſt the fierce rays of the ſun; yet were ill ſuited to latitudes where that glorious luminary ſheds its feebler influences, and is rarely ſeen but through a watery cloud."

Mr Groſe, however, thinks the above opinion is not ſufficiently favoured by the obſervations of ſeveral learned travellers who have accurately ſurveyed the ancient mode of building in thoſe parts of the world. Thus Cornelius le Brun, an indefatigable and inquiſitive traveller, has publiſhed many views of eaſtern buildings, particularly about the Holy Land: in all theſe, only one Gothic ruin, the church near Acre, and a few pointed arches, occur; and thoſe built by the Chriſtians when in poſſeſſion of the country. Near Iſpahan, in Perſia, he gives ſeveral buildings with pointed arches: but theſe are bridges and caravanſeras, whoſe age cannot be aſcertained; conſequently are as likely to have been built after, as before the introduction of this ſtyle into Europe. At Iſpahan itſelf, the mey doen, or grand market-place, is ſurrounded by divers magnificent Gothic buildings; particularly the royal moſque, and the Talael Ali-kapie, or theatre. The magnificent bridge of Alla-werdie-chan, over the river Zenderoet, 540 paces long and 17 broad, having 33 pointed arches, is alſo a Gothic ſtructure; but no mention is made when or by whom theſe were built. The Chiaer Baeg, a royal garden, is decorated with Gothic buildings; but theſe were, it is ſaid, built only in the reign of Schah Abbas, who died anno 1629. One building indeed, Mr Groſe admits, ſeems at firſt as if it would corroborate this aſſertion, and that the time when it was erected might be in ſome degree fixed; it is the tomb of Abdalla, one of the apoſtles of Mahomet, probably him ſurnamed Abu Becr. "If this tomb (ſays he) is ſuppoſed to have been built ſoon after his death, eſtimating that even to have happened according to the common courſe of nature, it will place its erection about the middle of the ſeventh century: but this is by far too conjectural to be much depended on. It alſo ſeems as if this was not the common ſtyle of building at that time, from the temple of Mecca; where, if any credit is to be given to the print of it in Sale's Koran, the arches are ſemicircular. The tomb here mentioned has one evidence to prove its antiquity; that of being damaged by the injuries of time and weather. Its general appearance much reſembles the eaſt end of the chapel belonging to Ely Houſe, London, except that which is filled up there by the great window: in the tomb is an open pointed arch, where alſo the columns or pinnacles on each ſide are higher in proportion.

As to the ſuppoſition that this kind of architecture was brought into Spain by the Moors (who poſſeſſed themſelves

themſelves of a great part of that country the beginning of the eighth century, which they held till the latter end of the fifteenth), and that from thence, by way of France, it was introduced into Britain; this at firſt ſeems plauſible: though, according to Mr Groſe, the only inſtance which ſeems to corroborate this hypotheſis, or at leaſt the only one proved by authentic drawings, is the moſque at Cordova in Spain; where, if we may judge from the views publiſhed by Mr Swinburne, although moſt of the arches are circular or horſe-ſhoe fathion, there are ſome pointed arches formed by the interſection of two ſegments of a circle. This moſque was, as it is there ſaid, begun by Abdoulrahman I. who laid the foundation two years before his death, and was finiſhed by his ſon Hiſhem or Iſean about the year 800. If theſe arches were part of the original ſtructure, it would be much in favour of the ſuppoſition; but as it is alſo ſaid that edifice has been more than once altered and enlarged by the Mahometans, before any well-grounded concluſion can be drawn, it is neceſſary to aſcertain the date of the preſent building.

There are alſo ſeveral pointed arches in the Mooriſh palace at Granada, called the *Alhambra*; but as that was not built till the year 1273, long after the introduction of pointed arches into Europe, they are as likely to be borrowed by the Moors from the Chriſtians, as by the Chriſtians from the Moors. The greateſt peculiarity in the Mooriſh architecture is the horſe-ſhoe arch, which containing more than a ſemicircle, contracts towards its baſe, by which it is rendered unfit to bear any conſiderable weight, being ſolely calculated for ornament. In Romſey church, Hampſhire, there are ſeveral arches of this form.

In the drawings of the Mooriſh buildings given in *Les Delices de l'Eſpagne*, ſaid to be faithful repreſentations, there are no traces of the ſtyle called Gothic architecture: there, as well as in the Mooriſh caſtle at Gibraltar, the arches are all repreſented circular. Perhaps a more general knowledge of theſe buildings would throw ſome light on the ſubject: poſſibly the Moors may, like us, at different periods, have uſed different manners of building.

The marks which conſtitute the character of Gothic or Saracenical architecture, are its numerous and prominent buttreſſes, its lofty ſpires and pinnacles, its large and ramified windows, its ornamental niches or canopies, its ſculptured ſaints, the delicate lace-work of its fretted roofs, and the profuſion of ornaments laviſhed indiſcriminately over the whole building: but its peculiar diſtinguiſhing characteriſtics are, the ſmall cluſtered pillars and pointed arches formed by the ſegments of two interſecting circles; which arches, though laſt brought into uſe, are evidently of more ſimple and obvious conſtruction than the ſemicircular ones; two flat ſtones, with their tops inclined to each other, and touching, form its rudiments; a number of boughs ſtuck into the ground oppoſite each other, and tied together at the top, in order to form a bower, exactly deſcribe it: whereas a ſemicircular arch appears the reſult of deeper contrivance, as conſiſting of more parts; and it ſeems leſs probable chance, from whence all theſe inventions were firſt derived, ſhould throw ſeveral wedge-like ſtones between two ſet perpendicular, ſo as exactly to fit and fill up the interval.

Biſhop Warburton, in his notes on Pope's Epiſtles, in the octavo edition, [illegible] ſervations on this ſubject:—"Our Gothic anceſtors had a lofty and manly notion of [illegible], on Greek and Roman ideas, than thoſe modern [illegible] who profeſs to ſtudy only claſſic elegance; and because the thing does honour to the [illegible] barbarians, I ſhall endeavour to explain it. All our ancient churches are called without diſtinction Gothic, but erroneouſly. They are of two ſorts: the one built in the Saxon times, the other in the Norman. Several cathedral and collegiate churches of the firſt ſort are yet remaining, either in whole or in part; of which this was the original: When the Saxon kings became Chriſtians, their piety (which was the piety of the times), conſiſted chiefly in building churches at home, and performing pilgrimages abroad, eſpecially to the Holy Land: and theſe ſpiritual exercites aſſiſted and ſupported one another; for the moſt venerable as well as moſt elegant models of religious edifices were then in Paleſtine. From theſe the Saxon builders took the whole of their ideas, as may be ſeen by comparing the drawings which travellers have given us of the churches yet ſtanding in that country, with the Saxon remains of what we find at home; and particularly in the ſameneſs of ſtyle in the latter religious edifices of the knights templars (profeſſedly built upon the model of the church of the Holy Sepulchre at Jeruſalem), with the earlier remains of our Saxon edifices. Now the architecture of the Holy Land was Grecian, but greatly fallen from its ancient elegance. Our Saxon performance was indeed a bad copy of it, and as much inferior to the works of St Helena and Juſtinian, as theirs were to the Grecian models they had followed: yet ſtill the footſteps of ancient art appeared in the circular arches, the entire columns, the diviſion of the entablature into a ſort of architrave, frize, and cornice, and a ſolidity equally diffuſed over the whole maſs. This, by way of diſtinction, I would call the Saxon architecture. But our Norman works had a very different original. When the Goths had conquered Spain, and the genial warmth of the climate and the religion of the old inhabitants had ripened their wits and inflamed their miſtaken piety, both kept in exerciſe by the neighbourhood of the Saracens, through emulation of their ſervice, and averſion to their ſuperſtition, they ſtruck out a new ſpecies of architecture, unknown to Greece and Rome, upon original principles, and ſuperior much nobler than what had given birth even to claſſical magnificence. For this northern people having been accuſtomed, during the gloom of Paganiſm, to worſhip the deity in groves (a practice common to all nations); when their new religion required covered edifices, they ingeniouſly projected to make them reſemble groves, as nearly as the diſtance of architecture would permit; at once indulging their old prejudices, and providing for their preſent conveniences, by a cool receptacle in a ſultry climate: and with what ſkill and ſucceſs they executed the project by the aſſiſtance of Saracen architects, whoſe exotic ſtyle of building very luckily ſuited their purpoſe, appears from hence, that no attentive obſerver ever viewed a regular avenue of well-grown trees intermixing their branches overhead, but it preſently put him in mind of the long viſto through the Gothic cathedral;

Or

or ever entered one of the larger and more elegant edifices of this kind, but it preſented to his imagination an avenue of trees; and this alone is what can be truly called the Gothic ſtyle of building. Under this idea of ſo extraordinary a ſpecies of architecture, all the irregular tranſgreſſions againſt art, all the monſtrous offences againſt nature, diſappear; every thing has its reaſon, every thing is in order, and an harmonious whole ariſes from the ſtudious application of means proper and proportionate to the end. For could the arches be otherwiſe than pointed, when the workmen were to imitate that curve which branches of two oppoſite trees make by their inſertion with one another? or could the columns be otherwiſe than ſplit into diſtinct ſhafts, when they were to repreſent the ſtems of a clump of trees growing cloſe together? On the ſame principles they formed the ſpreading ramification of the ſtone work in the windows, and the ſtained glaſs in the interſtices; the one to repreſent the branches, and the other the leaves of an opening grove, and both concurred to preſerve that gloomy light which inſpires religious reverence and dread. Laſtly, We ſee the reaſon of their ſtudied averſion to apparent ſolidity in theſe ſtupendous maſſes, deemed ſo abſurd by men accuſtomed to the apparent as well as real ſtrength of Grecian architecture. Had it been only a wanton exerciſe of the artiſt's ſkill, to ſhow he could give real ſtrength without the appearance of any, we might indeed admire his ſuperior ſcience, but we muſt needs condemn his ill judgment. But when one conſiders, that this ſurpriſing lightneſs was neceſſary to complete the execution of his idea of a ſylvan place of worſhip, one cannot ſufficiently admire the ingenuity of the contrivance. This too will account for the contrary qualities in what I call the Saxon architecture. Theſe artiſts copied, as has been ſaid, from the churches in the Holy Land, which were built on the models of the Grecian architecture, but corrupted by prevailing barbariſm; and ſtill farther depraved by a religious idea. The firſt places of Chriſtian worſhip were ſepulchres and ſubterraneous caverns, low and heavy from neceſſity. When Chriſtianity became the religion of the ſtate, and ſumptuous temples began to be erected, they yet, in regard to the firſt pious ages, preſerved the maſſive ſtyle, made ſtill more venerable by the church of the Holy Sepulchre; where this ſtyle was, on a double account, followed and aggravated."

42 Ancient riſe and progreſs of architecture in Britain.

In Britain, before the Roman invaſion, the natives appear to have had no better lodgings than thickets, dens, and caves. Some of theſe caves, which were their winter habitations, and places of retreat in time of war, were formed and rendered ſecure and warm by art, like thoſe of the ancient Germans, which are thus deſcribed by Tacitus: they are uſed to dig deep caves in the ground and cover them with earth, where they lay up their proviſions, and dwell in winter for the ſake of warmth. Into theſe they retire alſo from their enemies, who plunder the open country, but cannot diſcover theſe ſubterranean receſſes." Some of theſe ſubterraneous, or *earth houſes*, as they are called, are ſtill remaining in the Weſtern iſles of Scotland and in Cornwall. The ſummer habitations of the moſt ancient Britons were very ſlight; and, like thoſe of the Finnians, conſiſted only of a few ſtakes driven into the ground, interwoven with wattles, and covered over with the boughs of trees.

When Julius Cæſar invaded Britain, the inhabitants of Cantium (Kent), and of ſome other parts in the ſouth, had learned to build houſes a little more ſubſtantial and convenient. "The country (ſays Cæſar) abounds in houſes, which very much reſemble thoſe of Gaul." The firſt ſtep towards this improvement ſeems to have been that of daubing the wattled walls of their houſes with clay, to fill up the chinks and make them warmer. "The Germans uſed for this purpoſe a kind of pure reſplendent earth of different colours, which had an appearance of painting at a diſtance;" but the Gauls and Britons choſe rather to whitewaſh the clay after it was dry with chalk. Inſtead of the boughs of trees, they thatched theſe houſes with ſtraw, as a much better ſecurity againſt the weather. They next proceeded to form the walls of large beams of wood, inſtead of ſtakes and wattles. This ſeems to have been the mode of building in Britain, when it was firſt invaded by the Romans. "The Britons (ſays Diodorus Siculus, who was cotemporary with Cæſar) dwell in wretched cottages, which are conſtructed of wood, covered with ſtraw." Theſe wooden houſes of the ancient Gauls and Britons were not ſquare but circular, with high tapering roofs, at the top or centre of which was an aperture for the admiſſion of light and emiſſion of ſmoke. Thoſe of Gaul are thus deſcribed by Strabo: "They build their houſes of wood, in the form of a circle, with lofty tapering roofs." The foundations of ſome of the moſt magnificent of theſe circular houſes were of ſtone, of which there are ſome veſtiges ſtill remaining in Angleſey and other places. It was probably in imitation of theſe wooden houſes, that the moſt ancient ſtone edifices, of which there are ſtill ſome remains in the Weſtern iſlands of Scotland, were built circular, and have a large aperture at the top.

When the Britons were invaded by the Romans, they had nothing among them anſwering to our ideas of a city or town, conſiſting of a great number of contiguous houſes diſpoſed into regular ſtreets, lanes, and courts. Their dwellings, like thoſe of the ancient Germans, were ſcattered about the country, and generally ſituated on the brink of ſome rivulet for the ſake of water, and on the ſkirt of ſome wood or foreſt for the conveniency of hunting and paſture for their cattle. As theſe inviting circumſtances were more conſpicuous in ſome parts of the country than others, the princes and chiefs made choice of theſe places for their reſidence; and a number of their friends and followers, for various reaſons, built their houſes as near to them as they could with conveniency. This naturally produced an ancient Britiſh town, which is deſcribed by Cæſar and Strabo in the following manner: "From the Caſſi he learnt that the town of Caſſivelaun was at no great diſtance; a place defended by woods and marſhes, in which very great numbers of men and cattle were collected. For what the Britons call a town is a tract of woody country ſurrounded by a mound and ditch, for the ſecurity of themſelves and their cattle againſt the incurſions of their enemies." "The foreſts of the Britons are their cities; for when they have encloſed a very large circuit with felled trees, they build within it houſes for themſelves and hovels for their cattle. Theſe buildings are very ſlight, and

not deſigned for long duration." The palaces of the Britiſh princes were probably built of the ſame materials, and on the ſame plan, with the houſes of their ſubjects, and differed from them only in ſolidity and magnitude.

Though the communication between this iſland and the continent was more free and open after the firſt Roman invaſion than it had been before, and ſome of the Britiſh princes and chieftans even viſited Rome, then in its greateſt glory; it doth not appear that the people of Britain made any conſiderable improvements in their manner of building for at leaſt a hundred years after that invaſion. For when the renowned Caractacus was carried priſoner to Rome, A. D. 52, and obſerved the beauty and magnificence of the buildings in that proud metropolis of the world, he is ſaid to have expreſſed great ſurpriſe, "That the Romans, who had ſuch magnificent palaces of their own, ſhould envy the wretched cabins of the Britons."

It muſt appear very ſurpriſing that the ancient Britons, when they were ſo ignorant of architecture, were capable of erecting (if indeed it was erected by them) ſo ſtupendous a fabric as that of Stonehenge on Salisbury plain: A fabric which hath been the admiration of all ſucceeding ages, and hath outlaſted all the ſolid and noble ſtructures which were erected by the Romans in this iſland. See the article STONEHENGE.

Of another very extraordinary ſpecies of building ſeveral remains are found in the Highlands of Scotland. They conſiſt of ruins; the walls of which, inſtead of being cemented with lime or ſome other ſimilar ſubſtance, or of being raiſed with dry ſtones as was the method before cement came into uſe, are deſcribed as having been vitrified, or the ſtones run and compacted together by the force of fire. Concerning the origin, uſe, &c. of theſe buildings, different opinions have been formed; and even the reality of them as works of contrivance has been called in queſtion: of all which particulars the reader will find an account under the article *Forts* (*Vitrified*).

But for whatever purpoſes, or by whatever means, the above and other ſimilar ſtructures of a peculiar nature were erected, we have ſufficient evidence that the people of Britain, before they were ſubdued and inſtructed by the Romans, had but a rude knowledge of architecture, and were very meanly lodged. As ſoon, however, as the Romans began to form ſettlements and plant colonies in this iſland, a ſudden and ſurpriſing change enſued in the ſtate of architecture. For that wonderful people were as induſtrious as they were brave, and made haſte to adorn every country that they conquered. The firſt Roman colony was planted at Camelodunum, A. D. 50; and when it was deſtroyed by the Britons in their great revolt under Boadicea, only eleven years after, it appears to have been a large and well built town, adorned with ſtatues, temples, theatres, and other public edifices.

The Romans not only built a prodigious number of ſolid, convenient, and magnificent ſtructures for their own accommodation, but they exhorted, encouraged, and inſtructed the Britons to imitate their example. This was one of the arts which Agricola, the moſt excellent of the Roman governors, employed to civilize the Britons, and reconcile them to the Roman government. "The following winter (ſays Tacitus) was ſpent by Agricola in very ſalutary meaſures. That the Britons who led a roaming and unſettled life, and were eaſily inſtigated to war, might contract a love of peace and tranquillity, by being accuſtomed to a more pleaſant way of living, he exhorted and aſſiſted them to build houſes, temples, courts, and market-places. By praiſing the diligent and reproaching the indolent, he excited ſo great an emulation among the Britons, that after they had erected all thoſe neceſſary edifices in their towns, they proceeded to build others merely for ornament and pleaſure, as porticoes, galleries, baths, banqueting houſes, &c." From this time, which was A. D. 80, to the middle of the fourth century, architecture and all the arts immediately connected with it greatly flouriſhed in this iſland; and the ſame taſte for erecting ſolid, convenient, and beautiful buildings, which had long prevailed in Italy, was introduced into Britain. Every Roman colony and free city (of which there was a great number in this country was a little Rome, encompaſſed with ſtrong walls, adorned with temples, palaces, courts, halls, baſilicks, baths, markets, aqueducts, and many other fine buildings, both for uſe and ornament. The country everywhere abounded with well-built villages, towns, forts, and ſtations; and the whole was defended by that high and ſtrong wall, with its many towers and caſtles, which reached from the mouth of the river Tyne on the eaſt to the Solway frith on the weſt. This ſpirit of building, which was introduced and encouraged by the Romans, ſo much improved the taſte and increaſed the number of the Britiſh builders, that in the third century this iſland was famous for the great number and excellence of its architects and artificers. When the emperor Conſtantius, father of Conſtantine the Great, rebuilt the city of Autun in Gaul, A. D. 296, he was chiefly furniſhed with workmen from Britain, "which (ſays Eumenius) very much abounded with the beſt artificers."

Not very long after this period, architecture and all the arts connected with it began to decline very ſenſibly in Britain, and in all the provinces of the weſtern empire. This was partly owing to the building of Conſtantinople, which drew many of the moſt famous architects and other artificers into the eaſt, and partly to the irruptions and depredations of the barbarous nations.

The final departure of the Romans was followed by the almoſt total deſtruction of architecture in this iſland. For the unhappy and unwarlike people whom they left behind, having neither ſkill nor courage to defend the numerous towns, forts, and cities which they poſſeſſed, they were ſeized by their ferocious invaders, who firſt plundered and then deſtroyed them. By this means, the many noble ſtructures, with which Provincial Britain had been adorned by the art and induſtry of the Romans, were ruined or defaced in a very little time; and the unfortunate Britons were quite incapable of repairing them, or of building others in their room. That long ſucceſſion of miſeries in which they were involved by the Scots, Picts, and Saxons, deprived them of the many uſeful arts which they had learned from their former maſters, and lodged them once more in foreſts, dens, and caves, like their ſavage anceſtors.

The moſt wanton and extenſive devaſtations were thoſe committed by the Anglo-Saxons; among whom it

it ſeems to have been a maxim to deſtroy all the towns and caſtles which they took from their enemies, inſtead of preſerving them for their own uſe.

It cannot be ſuppoſed, that a people who wantonly demoliſhed ſo many beautiful and uſeful ſtructures had any taſte for the arts by which they had been erected. The truth is, that the Anglo-Saxons at their arrival in this iſland were almoſt totally ignorant of theſe arts; and, like all the other nations in Germany, had been accuſtomed to live in wretched hovels, built of wood or earth, and covered with ſtraw or the branches of trees. nor did they much improve in the knowledge of architecture for 200 years after their arrival. During that period, maſonry was quite unknown and unpractiſed in this iſland; and the walls even of cathedral churches were built of wood. "There was a time (ſays venerable Bede) when there was not a ſtone church in all the land; but the cuſtom was to build them all of wood. Finan, the ſecond biſhop of Lindisfarne, or Holy iſland, built a church in that iſland, A. D. 652, for a cathedral, which yet was not of ſtone, but of wood, and covered with reeds: and ſo it continued till Eadbert, the ſucceſſor of St Cuthbert, and ſeventh biſhop of Lindisfarne, took away the reeds, and covered it all over, both roof and walls, with ſheets of lead." The firſt cathedral of York was built of the ſame materials; and a church of ſtone was eſteemed a kind of prodigy in thoſe times that merited a place in hiſtory. "Paulinus, the firſt biſhop of York, built a church of ſtone in the city of Lincoln, whoſe walls (ſays Bede) are ſtill ſtanding, though the roof is fallen down; and ſome healing miracles are wrought in it every year, for the benefit of thoſe who have the faith to ſeek them."

There does not ſeem to have been ſo much as one church of ſtone, nor any artiſts who could build one, in all Scotland, at the beginning of the eighth century. For Naitan king of the Picts, in his famous letter to Ceolfred abbot of Weremouth, A. D. 710, earneſtly entreats him to ſend him ſome maſons to build a church of ſtone in his kingdom, in imitation of the Romans; which he promiſes to dedicate to the honour of the apoſtle Peter, to whom the abbey of Weremouth was dedicated: and we are told by Bede, who was then living in that abbey, that the reverend abbot Ceolfred granted this pious requeſt, and ſent maſons according to his deſire.

Maſonry was reſtored, and ſome other arts connected with it introduced into England, towards the end of the ſeventh century, by two clergymen, who were great travellers, and had often viſited Rome, where they had acquired ſome taſte for theſe arts. Theſe were, the famous Wilfrid biſhop of York, and afterwards of Hexham, and Benedict Biſcop, founder of the abbey of Weremouth. Wilfrid, who was one of the moſt ingenious, active, and magnificent prelates of the ſeventh century, was a great builder, and erected ſeveral ſtructures at York, Rippon, and Hexham, which were the admiration of the age in which he flouriſhed. The cathedral of Hexham, which was one of theſe ſtructures, is thus deſcribed by his biographer: "Having obtained a piece of ground at Hexham from Queen Etheldreda, he there founded a moſt magnificent church, which he dedicated to the bleſſed apoſtle St Andrew. As the plan of this ſacred ſtructure ſeems to have been inſpired by the Spirit of God, it would require a genius much ſuperior to mine to deſcribe it properly. How large and ſtrong were the ſubterraneous buildings, conſtructed of the fineſt poliſhed ſtones! How magnificent the ſuperſtructure, with its lofty roof, ſupported by many pillars, its long and high walls, its ſublime towers, and winding ſtairs! In one word, there is no church on this ſide of the Alps ſo great and beautiful." This admired edifice, of which ſome veſtiges are ſtill remaining, was built by maſons and other artificers brought from Rome by the munificence of its generous founder. Benedict Biſcop was the cotemporary and companion of Wilfrid in ſome of his journeys, and had the ſame taſte for the arts, He made no fewer than ſix journeys to Rome, chiefly with a view of collecting books, pictures, ſtatues, and other curioſities, and of perſuading artificers of various kinds to come from Italy and France and ſettle in England. Having obtained a grant of a conſiderable eſtate from Egfrid king of Northumberland, near the mouth of the river Were, he there founded a monaſtery, A. D. 674. "About a year after the foundations of this monaſtery were laid, Benedict croſſed the ſea into France, where he collected a number of maſons, and brought them over with him, in order to build the church of his monaſtery of ſtone after the Roman manner, of which he was a great admirer. His love to the apoſtle Peter, to whom he deſigned to dedicate his church, made him urge theſe workmen to labour ſo hard, that maſs was celebrated in it about a year after it was founded. When the work was far advanced, he ſent agents into France to procure if poſſible ſome glaſs-makers, a kind of artificers quite unknown in England, and to bring them over to glaze the windows of his church and monaſtery. Theſe agents were ſucceſsful, and brought ſeveral glaſs-makers with them; who not only performed the work required by Benedict, but inſtructed the Engliſh in the art of making glaſs for windows, lamps, drinking veſſels, and other uſes." *Bedæ Hiſt. Abbat.*

But though theſe arts of building edifices of ſtone, with windows of glaſs and other ornaments, were thus introduced by theſe two prelates in the latter part of the ſeventh century, they do not ſeem to have flouriſhed much for ſeveral centuries. It appears from many incidental hints in our ancient hiſtorians, that ſtone buildings were ſtill very rare in the eighth and ninth ages; and that when any ſuch buildings were erected, they were the objects of much admiration. When Alfred the Great, towards the end of the ninth century, formed the deſign of rebuilding his ruined cities, churches, and monaſteries, and of adorning his dominions with more magnificent ſtructures, he was obliged to bring many of his artificers from foreign countries. "Of theſe (as we are told by his friend and companion Aſſerius) he had an almoſt innumerable multitude, collected from different nations; many of them the moſt excellent in their ſeveral arts."

In the other parts of this iſland architecture was, as might naturally be imagined, in a ſtill leſs flouriſhing ſtate. It appears indeed to have been almoſt entirely loſt among the poſterity of the ancient Britons after they retired to the mountains of Wales. The chief palace of the kings of Wales, where the nobility and wiſe men aſſembled for making laws, was called the *white palace*, becauſe

Eddii Vita Wilfridi, Cap.

becauſe the walls of it were woven with white wands which had the bark peeled off. By the laws of Wales, whoever burnt or deſtroyed the king's hall or palace was obliged to pay one pound and eighty pence, beſides one hundred and twenty pence for each of the adjacent buildings, which were eight in number; viz. the dormitory, the kitchen, the chapel, the granary, the bakehouſe, the ſtorehouſe, the ſtable, and the doghouſe. From hence it appears, that a royal reſidence in Wales, with all its offices, when theſe laws were made, was valued at five pounds and eighty pence of the money of that age, equal in quantity of ſilver to ſixteen pounds of our money, and in efficacy to one hundred and ſixty. This is certainly a ſufficient proof of the meanneſs of thoſe buildings which were only of wood. Even the caſtles in Wales, in this period, that were built for the ſecurity of the country, appear to have been conſtructed of the ſame materials; for the laws required the king's vaſſals to come to the building of theſe caſtles with no other tools but an axe.

The arts of building do not ſeem to have been much better underſtood by the Scots and Picts than by the ancient Britons in the former part of this period. When Finan, the ſecond biſhop of Lindisfarne, built a church of wood in that iſland, A. D. 652, he is ſaid to have done it *more Scotorum*, after the manner of his countrymen the Scots; and it hath been already obſerved, that Naitan king of the Picts was obliged to bring maſons from Northumberland, when he reſolved to build a church of ſtone in his dominions, A. D. 710. After this laſt period, it is probable that the Picts, and perhaps the Scots, began to learn and practiſe the art of maſonry; becauſe there are ſtill ſome ſtone buildings of a very ſingular conſtruction, and great antiquity, to be ſeen in Scotland. Theſe buildings are all circular; though of two kinds ſo different from each other, that they ſeem to be the work of different ages and of different nations. The largeſt of theſe ſtructures are in a very extraordinary taſte of architecture; and are thus deſcribed by a modern antiquary, who viewed them with no little attention: "Having arrived at the barrack of Glenelg, I was conducted to the remains of thoſe ſtupendous fabrics, ſeated about two miles from thence, in a valley called *Glenbeg*, in which four of them anciently ſtood. Two of theſe are now almoſt quite demoliſhed, the third is half fallen down, the fourth is almoſt entire. The firſt I met with lies towards the north ſide of the valley, and is called *Caſtle Chalamine*, or *Malcom's Caſtle*. It ſtands upon a conſiderable eminence, and affords us a fine proſpect of the iſland of Sky and a good part of the ſea coaſt. The foundation of this only appears; as alſo of that other, on the eaſt end of the valley, called *Caſtle Chonel*. About a quarter of a mile further, upon the bank of a rivulet which paſſes through the middle of the glen, ſtands the third fabric, called *Caſtle Telve*. I found it compoſed of ſtones without cement; not laid in regular courſes, after the manner of elegant buildings, but rudely and without order. Thoſe toward the baſe were pretty large, but aſcending higher they were thin and flat, ſome of them ſcarce exceeding the thickneſs of an ordinary brick. I was ſurpriſed to find no windows on the outſide, nor any manner of entrance into the fabric, except a hole towards the weſt, at the baſe, ſo very low and narrow, that I was forced to creep in upon hands and knees, and found that it carried me down four or five ſteps below the ſurface of the ground. When I was got within I was entertained betwixt two walls, having a cavity or void ſpace which led me round the whole building. Oppoſite to the little entry, on the outſide, was a pretty large door in the ſecond or inner wall, which let me into the area or inner court. When I was there, I perceived that one half of the building was fallen down, and thereby had the opportunity of ſeeing a complete ſection thereof. The two walls join together at the top, round about, and have formed a large void ſpace or area in the middle. But to give a more complete idea of theſe buildings, I ſhall deſcribe the fourth, called *Caſtle Troddan*, which is by far the moſt entire of any in that country, and from whence I had a very clear notion how theſe fabrics were originally contrived. On the outſide were no windows, nor were the materials of this caſtle anywiſe different from thoſe of the other already deſcribed, only the entry on the outſide was ſomewhat larger; but this might be occaſioned by the falling of the ſtones from above. The area of this makes a complete circle; and there are four doors in the inner wall, which face the four cardinal points of the compaſs. Theſe doors are each eight feet and a half high, and five feet wide, and lead from the area into the cavity between the two walls, which runs round the whole building. The perpendicular height of this fabric is exactly 33 feet; the thickneſs of both walls, including the cavity between, no more than 12 feet; and the cavity itſelf is hardly wide enough for two men to walk abreaſt; the external circumference is 178 feet. The whole height of the fabric is divided into four parts or ſtories, ſeparated from each other by thin floorings of flat ſtones, which knit the two walls together, and run quite round the building; and there have been winding ſtairs of the ſame flat ſtones aſcending betwixt wall and wall up to the top. The undermoſt partition is ſomewhat below the ſurface of the ground, and is the wideſt; the others grow narrower by degrees till the walls cloſe at the top. Over each door are nine ſquare windows, in a direct line above each other, for the admiſſion of light: and between every row of windows are three others in the uppermoſt ſtory, riſing above a cornice which projects out from the inner wall and runs round the fabric." From this deſcription of theſe ſingular edifices, it plainly appears that they were deſigned both for lodging and defence; and conſidering the ſtate of the times in which they were built, they were certainly very well contrived for anſwering both theſe purpoſes.

Gordon's Itinerarium Septentrionale, p. 166.

The ſtone edifices of the other kind which were probably erected in this period, and of which ſome few are ſtill to be ſeen in Scotland, are not ſo large as the former, but more artificial. They are ſlender, lofty, circular towers, of cut ſtone, laid in regular rows, between 40 and 50 feet in external circumference, and from 70 to 100 feet high, with one door ſome feet from the ground. They are exactly ſimilar to the round tower of Ardmore, and ſeveral others, in Ireland; and therefore were probably built about the ſame time, which was in the tenth century, and for the ſame purpoſes; which are believed by ſome to have been for the confinement of penitents while they were performing penance. On this account theſe towers are always

found in the neighbourhood of churches both in Scotland and Ireland; and are said to have been used in this manner: "The penitents were placed in the uppermost story of the tower (which commonly consisted of five or six stories); where having made probation, or done penance, such a limited time, according to the heinousness of their crime, they then were permitted to descend to the next floor, and so on by degrees, until they came to the door, which always faced the entrance of the church, where they stood to receive absolution from the clergy, and the blessings of the people. A tedious process, to which few penitents in the present age would willingly submit. Other writers are of opinion, that the design of these circular towers (of which one is still remaining at Abernethy and another at Brechin) was to be places from whence the people were called to public worship by the sound of a horn or trumpet, before the introduction of bells.

Archæologia, vol i. p. 337.

This art received very great improvements in the 12th century; which indeed may be called *the age of architecture*; when the rage for building was more violent in England than at any other time. The great and general improvements that were made in the fabrics of houses and churches in the first years of this century, are thus described by a cotemporary writer. "The new cathedrals and innumerable churches that were built in all parts, together with the many magnificent cloisters and monasteries, and other apartments of monks, that were then erected, afford a sufficient proof of the great felicity of England in the reign of Henry I. The religious of every order, enjoying peace and prosperity, displayed the most astonishing ardour in every thing that might increase the splendour of divine worship. The fervent zeal of the faithful prompted them to pull down houses and churches everywhere, and rebuild them in a better manner. By this means the ancient edifices that had been raised in the days of Edgar, Edward, and other Christian kings, were demolished, and others of greater magnitude and magnificence, and of more elegant workmanship, were erected in their room, to the glory of God."

Oraerio Vital. Hist. Eccles. p. 788.

As the prodigious power of religious zeal, whatever turn it happens to take, when it is thoroughly heated, is well known, it may not be improper to give one example of the arts employed by the clergy and monks of this period, to inflame the pious ardour of the kings, nobles, and people, for building and adorning churches. When Joffred abbot of Croyland resolved to rebuild the church of his monastery in a most magnificent manner, A. D. 1106, he obtained from the archbishops of Canterbury and York, a bull dispensing with the third part of all penances for sin to those who contributed any thing towards the building of that church. This bull was directed not only to the king and people of England, but to the kings of France and Scotland, and to all other kings, earls, barons, archbishops, bishops, abbots, priors, rectors, presbyters, and clerks, and to all true believers in Christ, rich and poor, in all Christian kingdoms. To make the best use of this bull, he sent two of his most eloquent monks to proclaim it over all France and Flanders, two other monks into Scotland, two into Denmark and Norway, two into Wales, Cornwall, and Ireland, and others into different parts of England. "By this means (says the historian) the wonderful benefits granted to all the contributors to the building of this church were published to the very ends of the earth; and great heaps of treasure and masses of yellow metal flowed in from all countries upon the venerable Abbot Joffred, and encouraged him to lay the foundations of his church." Having spent about four years in collecting mountains of different kinds of marble from quarries both at home and abroad, together with great quantities of lime, iron, brass, and other materials for building, he fixed a day for the great ceremony of laying the foundation, which he contrived to make a very effectual mean of raising the superstructure! For on the long-expected day, the feast of the holy virgins Felicitas and Perpetua, an immense multitude of earls, barons, and knights, with their ladies and families, of abbots, priors, monks, nuns, clerks, and persons of all ranks, arrived at Croyland, to assist at this ceremony. The pious Abbot Joffred began by saying certain prayers, and shedding a flood of tears on the foundation. Then each of the earls, barons, knights, with their ladies, sons, and daughters, the abbots, clerks, and others, laid a stone, and upon it deposited a sum of money, a grant of lands, tithes, or patronages, or a promise of stone, lime, wood, labour, or carriages, for building the church. After this the abbot entertained the whole company, amounting to 5000 persons, at dinner. To this entertainment they were all entitled; for the money, and grants of different kinds, which they had deposited on the foundation stones, were alone sufficient to have raised a very noble fabric. By such arts as these the clergy inspired kings, nobles, and people of all ranks, with so ardent a spirit for these pious works, that in the course of this period almost all the sacred edifices in England were rebuilt, and many hundreds of new ones raised from the foundation. Nor was this spirit confined to England, but prevailed as much in Scotland in proportion to its extent and riches. King David I. alone, besides several cathedrals and other churches, built no fewer than thirteen abbeys and priories, some of which were very magnificent structures.

The sacred architecture of the Anglo-Normans in the beginning of this period did not differ much in its style and manner from that of the Anglo-Saxons; their churches being in general plain, low, strong, and dark; the arches both of the doors and windows semicircular, with few or no ornaments. By degrees, through much practice, our architects, who were all monks or clergymen, improved their taste and skill, and ventured to form plans of more noble, light, and elevated structures, with a great variety of ornaments; which led to that bold magnificent style of building, commonly, though perhaps not very properly, called *the later Gothic*. It is not improbable that our monkish architects were assisted in attaining this style of building by models from foreign countries, or by instructions from such of their own number as had visited Italy, France, Spain, or the East. But the origin of this style of architecture has been already considered, and the characters by which it is distinguished from the ancient Gothic have also been described: (See N° 21. *supra*.) Its first appearance in England was towards the latter end of the reign of King Henry II. But it was not at once thoroughly adopted; some

ſome ſhort ſolid columns and ſemicircular arches being retained and mixed with the pointed ones; as for example, in the weſt end of the Old Temple church; and at York, where under the choir there remains much of the ancient work, the arches of which are but juſt pointed and riſe on ſhort round pillars. In the reign of Henry III. however, this manner of building ſeems to have gained a complete footing; the circular giving place to the pointed arch, and the maſſive column yielding to the ſlender pillar. Indeed, like all novelties, when once admitted, the rage of faſhion made it become ſo prevalent, that many of the ancient and ſolid buildings, erected in former ages, were taken down in order to be re-edified in the new taſte, or had additions patched to them, of this mode of architecture. The preſent cathedral church of Saliſbury was begun early in this reign, and finiſhed in the year 1258. It is entirely in the Saracenic ſtyle; and, according to Sir Chriſtopher Wren, may be juſtly accounted one of the beſt patterns of architecture of the age in which it was built. Its excellency is undoubtedly in a great meaſure owing to its being conſtructed on one plan; whence ariſes that ſymmetry and agreement of parts, not to be met with in many of our other cathedral churches; which have moſtly been built at different times, and in a variety of ſtyles. From this time till the reign of Henry VIII. the faſhionable pillars in churches were of Purbec marble, very ſlender and round, encompaſſed with marble ſhafts a little detached, having each a capital adorned with foliage, which joining, formed one elegant capital for the whole pillar. The windows were long and narrow, with pointed arches and painted glaſs, which was introduced about that time, or at leaſt became more common. In this century alſo they began to delight in lofty ſteeples, with ſpires and pinnacles. In the fourteenth century, the pillars conſiſted of an aſſemblage of ſhafts not detached, but united, forming one ſolid and elegant column; the windows, eſpecially thoſe in the eaſt and weſt ends, were greatly enlarged, divided into ſeveral lights by ſtone mullions running into ramifications above, and forming numerous compartments in various fanciful ſhapes. Thoſe windows, filled with ſtained glaſs of the moſt lively colours, repreſenting kings, ſaints, and martyrs, and their hiſtories, made a moſt ſolemn and glorious appearance. There were ſeveral other variations, eſpecially in the taſte of the carvings and other ornaments, which are too minute for general hiſtory.

As to the ſtate of civil architecture during the ſame period: The houſes of the common people in the country, and of the lower burgeſſes in towns and cities, were very little improved in their ſtructure, that moſt numerous and uſeful order of men being much depreſſed in the times we are now delineating. Even in the capital city of London, all the houſes of mechanics and common burgeſſes were built of wood, and covered with ſtraw or reeds, towards the end of the twelfth century. But the palaces, or rather caſtles, of the Anglo-Norman kings, barons, and prelates, were very different from the reſidences of perſons of the ſame rank in the Anglo-Saxon times. For this we have the teſtimony of a perſon of undoubted credit, who was well acquainted with them both. "The Anglo-Saxon nobles (ſays William of Malmſbury) ſquandered away their ample revenues in low and mean houſes; but the French and Norman barons are very different from them, living at leſs expence, but in great and magnificent palaces." The truth is, that the rage of building fortified caſtles, was no leſs violent among the Norman princes, prelates, and barons, than that of building churches. To this they were prompted not only by the cuſtom of their native country, but alſo by their dangerous ſituation in this iſland. Surrounded by multitudes, whom they had depreſſed and plundered, and by whom they were abhorred, they could not think themſelves ſafe without the protection of deep ditches and ſtrong walls. The Conqueror himſelf was ſenſible, that the want of fortified places in England had greatly facilitated his conqueſt, and might facilitate his expulſion; and therefore he made all poſſible haſte to remedy this defect, by building very magnificent and ſtrong caſtles in all the towns within the royal demeſnes. "William (ſays Matthew Paris) excelled all his predeceſſors in building caſtles, and greatly haraſſed his ſubjects and vaſſals with theſe works." All his earls, barons, and even prelates, imitated his example; and it was the firſt care of every one who received the grant of an eſtate from the crown to build a caſtle upon it for his defence and reſidence. The diſputes about the ſucceſſion in the following reigns, kept up this ſpirit for building great and ſtrong caſtles. William Rufus was ſtill a greater builder than his father. "This William (ſays Henry Knyghton,) was much addicted to building royal caſtles and palaces, as the caſtles of Dover, Windſor, Norwich, Exeter, the palace of Weſtminſter, and many others, teſtify; nor was there any king of England before him that erected ſo many and ſuch noble edifices." Henry I. was alſo a great builder both of caſtles and monaſteries. But this rage for building never prevailed ſo much in any period of the Engliſh hiſtory as in the turbulent reign of King Stephen, from A. D. 1135 to A. D. 1154. "In this reign (as we are told by the author of the Saxon Chronicle) every one who was able built a caſtle; ſo that the poor people were worn out with the toil of theſe buildings, and the whole kingdom was covered with caſtles." This laſt expreſſion will hardly appear too ſtrong, when we are informed, that beſides all the caſtles before that time in England, no fewer than 1115 were raiſed from the foundation in the ſhort ſpace of 19 years. See the article CASTLE.

The caſtles, monaſteries, and greater churches of this period, were generally covered with lead, the windows glazed; and when the walls were not of aſhler, they were neatly plaſtered and whitewaſhed on both ſides. The doors, floors, and roof, were commonly made of oak planks and beams, exactly ſmoothed and jointed, and frequently carved. It is hardly neceſſary to obſerve, that the building one of theſe great and magnificent caſtles, monaſteries, or churches, of which there were many in England, muſt have been a work of prodigious expence and labour; and that the architects and artificers, by whom that work was planned and executed, muſt have attained conſiderable dexterity in their reſpective arts. Several of theſe architects have obtained a place in hiſtory, and are highly celebrated for their ſuperior ſkill. William of Sens, architect to Archbiſhop Lanfranc in building his cathedral, is ſaid, by Gervaſe of Canterbury, to have been a moſt exquiſite artiſt both in ſtone and wood. He made

made not only a model of the whole cathedral, but of every particular piece of ſculpture and carving, for the direction of the workmen; and invented many curious machines for loading and unloading ſhips, and conveying heavy weights by land, becauſe all the ſtones were brought from Normandy. Matthew Paris ſpeaks even in a higher ſtrain of Walter of Coventry, who flouriſhed towards the end of this period, when he ſays, that "ſo excellent an architect had never yet appeared, and probably never would appear, in the world." This encomium was undoubtedly too high; but it is impoſſible to view the remains of many magnificent fabrics, both ſacred and civil, that were erected in this period, without admiring the genius of the architects by whom they were planned, and the dexterity of the workmen by whom they were executed.

In the beginning of the reign of Henry VIII. or rather towards the latter end of that of Henry VII. when brick building became common, a new kind of low pointed arch grew much in uſe: it was deſcribed from four centres, was very round at the haunches, and the angle at the top was very obtuſe. This ſort of arch is to be found in every one of Cardinal Wolſey's buildings; alſo at Weſt Sheen; an ancient brick gate at Mile End, called *King John's Gate;* and in the great gate of the palace of Lambeth. From this time Gothic architecture began to decline; and was ſoon after ſupplanted by a mixed ſtyle, if one may venture to call it one; wherein the Grecian and Gothic, however diſcordant and irreconcilable, are jumbled together. Concerning this mode of building, Mr Warton, in his obſervations on Spencer's Faery Queene, has the following anecdotes and remarks:

"Although the Roman or Grecian architecture did not begin to prevail in England till the time of Inigo Jones, yet our communication with the Italians, and our imitation of their manners, produced ſome ſpecimens of that ſtyle much earlier. Perhaps the earlieſt was Somerſet Houſe in the Strand, built about the year 1549, by the duke of Somerſet, uncle to Edward VI. The monument of Biſhop Gardiner, in Wincheſter cathedral, made in the reign of Mary, about 1555, is decorated with Ionic pillars. Theſe verſes of Spenſer,

> ——————————Did riſe
> On ſtately pillars, fram'd after the Doric guiſe.

bear an alluſion to ſome of the faſhionable improvements in building, which at this time were growing more and more into eſteem. Thus alſo Biſhop Hall, who wrote about the ſame time, viz. 1598:

> There findeſt thou ſome ſtately Doric frame,
> Or neat Ionicke work.——————

But theſe ornaments were often abſurdly introduced into the old Gothic ſtyle: as in the magnificent portico of the ſchools at Oxford, erected about the year 1613; where the builder, in a Gothic edifice, has affectedly diſplayed his univerſal ſkill in the modern architecture, by giving us all the five orders together. However, moſt of the great buildings of Queen Elizabeth's reign have a ſtyle peculiar to themſelves both in form and finiſhing; where, though much of the old Gothic is retained, and great part of the new taſte is adopted, yet neither predominates; while both, thus diſtinctly blended, compoſe a fantaſtic ſpecies, hardly reducible to any claſs or name. One of its characteriſtics is the affectation of large and lofty windows: where, ſays Bacon, "you ſhall have ſometimes fair houſes ſo full of glaſs, that one cannot tell where to come to be out of the ſun."

To return now to our general hiſtory, and to conclude: In the 15th and 16th centuries, when learning of all kinds began to revive, the chaſte architecture of the Greeks and Romans ſeemed as it were to be recalled into life. The firſt improvements in it began in Italy, and owed their exiſtence to the many ruins of the ancient Roman ſtructures that were to be found in that country; from whence an improved method of building was gradually brought into the other countries of Europe: and though the Italians for a long time retained the ſuperiority as architects over the other European nations; yet, as men of genius travelled from all quarters into Italy, where they had an opportunity of ſeeing the originals from whence the Italians copied, architects have ariſen in other nations equal, if not ſuperior, to any that ever appeared in Italy. Of this we have a recent inſtance in our own countryman Mr Mylne, who lately gained the prize in architecture at Rome, where it would no doubt be diſputed by ſuch natives of Italy as were beſt ſkilled in that art.

PART I. PRINCIPLES OF ARCHITECTURE.

MANY ages muſt have elapſed before architecture came to be conſidered as a fine art. Utility was its original deſtination, and ſtill continues to be its principal end. Experience, however, has taught us, that architecture is capable of exciting a variety of agreeable feelings. Of theſe, utility, grandeur, regularity, order, and proportion, are the chief.

Diviſion of buildings. Architecture, being an uſeful as well as a fine art, leads us to diſtinguiſh buildings, and parts of buildings, into three kinds, viz. what are intended for uſe ſolely, what for ornament ſolely, and what for both. Buildings intended for utility ſolely, ought in every part to correſpond preciſely to that intention: the leaſt deviation from uſe, though contributing to ornament, will be diſagreeable; for every work of uſe being conſidered as a mean to an end, its perfection as a mean is the capital circumſtance, and every other beauty in oppoſition is neglected as improper. On the other hand, in ſuch things as are intended ſolely for ornament, as columns, obeliſks, triumphal arches, &c. beauty alone ought to be regarded. The principal difficulty in architecture lies in combining uſe and ornament. In order to accompliſh theſe ends, different and even oppoſite means muſt be employed; which is the reaſon why they are ſo ſeldom united in perfection; and hence, in buildings of this kind, the only practicable method is, to

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to prefer utility to ornament according to the character of the building: in palaces, and such buildings as admit of a variety of useful contrivances, regularity ought to be preferred; but in dwelling houses that are too small for variety of contrivance, utility ought to prevail, neglecting regularity as far as it stands in opposition to convenience.

24 Intrinsic and relative beauty.

In considering attentively the beauty of visible objects, we discover two kinds. The first may be termed *intrinsic* beauty, because it is discovered in a single object, without relation to any other. The second may be termed *relative* beauty, being founded on a combination of relative objects. Architecture admits of both kinds. We shall first give a few examples of *relative* beauty.

The proportions of a door are determined by the use to which it is destined. The door of a dwelling house, which ought to correspond to the human size, is confined to seven or eight feet in height and three or four in breadth. The proportions proper for a stable or coachhouse are different. The door of a church ought to be wide, in order to afford an easy passage for a multitude; and its height must be regulated by its wideness, that the proportion may please the eye. The size of the windows ought always to be proportioned to that of the room they are destined to illuminate; for if the apertures be not large enough to convey light to every corner, the room must be unequally lighted, which is a great deformity. Steps of stairs should likewise be accommodated to the human figure, without regarding any other proportion; they are accordingly the same in large and in small buildings, because both are inhabited by men of the same size.

We shall next consider *intrinsic* beauty, blended with that which is *relative*. A cube itself is more agreeable than a parallelopipedon; this constantly holds in small figures: but a large building in the form of a cube is lumpish and heavy; while a parallelopipedon, set on its smaller base, is more agreeable on account of its elevation: Hence the beauty of Gothic towers. But if this figure were to be used in a dwelling house, to make way for relative beauty, we should immediately perceive that utility ought chiefly to be regarded; and this figure, inconvenient by its height, ought to be set on its larger base: the loftiness in this case would be lost; but that loss will be more than sufficiently compensated by the additional convenience. Hence the form of buildings spread more upon the ground than raised in height, is always preferred for a dwelling house.

25 Internal divisions of houses.

With regard to the internal divisions, utility requires that the rooms be rectangular, to avoid useless spaces. An hexagonal figure leaves no void spaces; but it determines the rooms to be all of one size, which is both inconvenient and disagreeable for want of variety. Though a cube be the most agreeable figure, and may answer for a room of a moderate size; yet, in a very large room, utility requires a different figure. Unconfined motion is the chief convenience of a great room; to obtain this the greatest length that can be had is necessary. But a square room of large size is inconvenient. It removes chairs, tables, &c. at too great a distance from the hand, which, when unemployed, must be ranged along the sides of the room. Utility, therefore, requires a large room to be a parallelogram. This figure is [illegible] calculated for the admission of light; because, to avoid [illegible] lights, all the windows ought to be in one wall; and if the opposite wall be at such a distance as not to be sufficiently lighted, the room must be obscure. The height of a room exceeding nine or ten feet has little influence on beauty: therefore proportion is the only rule we have to regulate the height when above that number of feet.

Artists who deal in the beautiful, [illegible] the eye: palaces and temples [illegible] intrinsic beauty may be fully displayed, and [illegible] portunity of exerting their taste. But such a propensity is peculiarly unhappy with regard to private dwelling houses; because, in these, relative beauty cannot be displayed to perfection without hurting intrinsic beauty. There is no opportunity for great variety of parts in a small house; and in edifices of this kind, internal convenience has not hitherto been happily adjusted to external regularity. Perhaps an accurate coincidence in this respect is beyond the reach of art. Architects, however, constantly split upon this rock; for they never can be persuaded to give over attempting to reconcile these two incompatibles: how otherwise should it happen, that of the endless variety of private dwelling houses, there [illegible] be one found that is generally agreed upon as a good pattern? The smallness of the size of such houses obliges the architect, in some articles, to sacrifice convenience to regularity, and, in others regularity to convenience; and accordingly the house which turns out neither regular nor convenient, never fails to displease.

Nothing can be more evident, than that the form of a dwelling house ought to be suited to the climate; yet no error is more common than to copy in Britain the form of Italian houses, not forgetting even those parts that are purposely contrived for collecting air, and for excluding the sun; witness our colonnades and logios, designed by the Italians to gather cool air, and exclude the beams of the sun, conveniences which the climate of this country does not require.

27 Architecture considered as a fine art.

We shall next view architecture as one of the fine arts; which will lead us to the examination of such buildings, and parts of buildings, as are calculated solely to please the eye. Variety prevails in the works of nature; but art requires to be guided by rule and compass. Hence it is, that in such works of art as imitate nature, the great art is, to hide every appearance of art; which is done by avoiding regularity and increasing variety. But in works of art that are original and not imitative, such as architecture, strict regularity and uniformity ought to be studied, so far as consistent with utility.

28 Proportions of number.

Proportion is not less agreeable than regularity and [illegible] uniformity; and therefore, in buildings intended to please the eye, they are all equally essential. It is taken for granted by many writers, that in all the parts of a building there are certain strict proportions which please the eye, in the same manner as in sound there are certain strict proportions which please the ear; and that, in both, the slightest deviation is equally disagreeable. Others seem to relish more a comparison between proportion in numbers and proportion in quantity; and maintain, that the same proportions are agreeable in both. The proportion, for example, of the num-

bers

Principles. bers 16, 24, and 36, are agreeable; and ſo, ſay they, are the proportions of a room, whoſe height is 16 feet, the breadth 24, and the length 36. But it ought to be conſidered, that there is no reſemblance or relation between the objects of different ſenſes. What pleaſes the ear in harmony, is not the proportion of the ſtrings of the inſtrument, but of the ſound which theſe ſtrings produce. In architecture, on the contrary, it is the proportion of different quantities that pleaſes the eye, without the leaſt relation to ſound. The ſame thing may be ſaid of numbers. Quantity is a real quality of every body; number is not a real quality, but merely an idea that ariſes upon viewing a plurality of things in ſucceſſion. An arithmetical proportion is agreeable in numbers; but have we from this any reaſon to conclude, that it muſt alſo be agreeable in quantity? At this rate, a geometrical proportion, and many others, ought alſo to be agreeable in both. A certain proportion may coincide in quantity and number; and amongſt an endleſs variety of proportions, it would be wonderful if there never ſhould be a coincidence. One example is given of this coincidence in the numbers 16, 24, and 36; but to be convinced that it is merely accidental, we need but reflect, that the ſame proportions are not applicable to the external figure of a houſe, and far leſs to a column.

It is ludicrous to obſerve writers acknowledging the neceſſity of accurate proportions, and yet differing widely about them. Laying aſide reaſoning and philoſophy, one fact univerſally agreed on ought to have undeceived them, that the ſame proportions which pleaſe in a model are not agreeable in a large building: a room 48 feet in length, and 24 in breadth and height, is well proportioned: but a room 12 feet wide and high, and 24 long, approaches to a gallery.

29 Beauty ariſing from proportion.

Perrault, in his compariſon of the ancients and moderns, goes to the oppoſite extreme; maintaining, that the different proportions aſſigned to each order of columns are arbitrary, and that the beauty of theſe proportions is entirely the effect of cuſtom. But he ſhould have conſidered, that if theſe proportions had not originally been agreeable, they could never have been eſtabliſhed by cuſtom.

For illuſtrating this point, we ſhall add a few examples of the agreeableneſs of different proportions. In a ſumptuous edifice, the capital rooms ought to be large, otherwiſe they will not be proportioned to the ſize of the building; for the ſame reaſon, a very large room is improper in a ſmall houſe. But in things thus related, the mind requires not a preciſe or ſingle proportion, rejecting all others; on the contrary, many different proportions are equally agreeable. It is only when a proportion becomes looſe and diſtant, that the agreeableneſs abates, and at laſt vaniſhes. Accordingly, in buildings, rooms of different proportions are found to be equally agreeable, even where the proportion is not influenced by utility. With regard to the proportion the height of a room ſhould bear to the length and breadth, it muſt be extremely arbitrary, conſidering the uncertainty of the eye as to the height of a room when it exceeds 16 or 17 feet. In columns, again, every architect muſt confeſs that the proportion of height and thickneſs varies betwixt eight diameters and 10, and that every proportion between theſe two extremes is agreeable. Beſides, there muſt certainly be a further variation of proportion, depending on the ſize of the column. A row of columns 10 feet high, and a row twice that height, require different proportions: The intercolumniations muſt alſo differ in proportion according to the height of the row. Principles.

Proportion of parts is not only itſelf a beauty, but is inſeparably connected with a beauty of the higheſt reliſh, that of concord and harmony; which will be plain from what follows: A room, the parts of which are all finely adjuſted to each other, ſtrikes us not only with the beauty of proportion, but with a pleaſure far ſuperior. The length, the breadth, the height, the windows, raiſe each of them a ſeparate emotion: Theſe emotions are ſimilar; and, though faint when ſeparately felt, they produce in conjunction the emotion of concord or harmony, which is very pleaſant. On the other hand, where the length of a room far exceeds the breadth, the mind, comparing together parts ſo intimately connected, immediately perceives a diſagreement or diſproportion which diſguſts. Hence a long gallery, however convenient for exerciſe, is not an agreeable figure of a room.

In buildings deſtined chiefly or ſolely to pleaſe the eye, regularity and proportion are eſſentially neceſſary, becauſe they are the means of producing intrinſic beauty. But a ſkilful artiſt will not confine his view to regularity and proportion; he will alſo ſtudy congruity, which is perceived when the form and ornaments of a ſtructure are ſuited to the purpoſe for which it is appointed. Hence every building ought to have an expreſſion ſuited to its deſtination. A palace ought to be ſumptuous and grand; a private dwelling, neat and modeſt; a playhouſe, gay and ſplendid; and a monument, gloomy and melancholy. A heathen temple has a double deſtination: It is conſidered as a houſe dedicated to ſome divinity; therefore it ought to be grand, elevated, and magnificent: It is alſo conſidered as a place of worſhip; and therefore ought to be ſomewhat dark and gloomy, becauſe dimneſs or obſcurity produces that tone of mind which is favourable to humility and devotion. Columns, beſides their chief deſtination of being ſupports, contribute to that peculiar expreſſion which the deſtination of a building requires. Columns of different proportions ſerve to expreſs lightneſs, lightneſs, &c. as well as ſtrength. Situation may alſo contribute to expreſſion: Conveniency regulates the ſituation of a private dwelling-houſe; and the ſituation of a palace ought to be lofty. This leads to a queſtion, Whether the ſituation, where there happens to be no choice, ought, in any meaſure, to regulate the form of the edifice? The connexion between a great houſe and a neighbouring field, though not extremely intimate, demands, however, ſome congruity. It would, for example, diſpleaſe us to find an elegant building thrown away upon a wild uncultivated country: congruity requires a poliſhed field for ſuch a building. The old Gothic form of building was well ſuited to the rough uncultivated regions were it was invented; but was very ill adapted to the fine plains of France and Italy.

30 Form of ſtructures to be ſuited to the purpoſes for which they are intended.

31 Internal diviſions of houſes.

The external ſtructure of a houſe leads naturally to its internal ſtructure. A large and ſpacious room, which is the firſt that commonly receives us, is a bad contrivance in ſeveral reſpects. In the firſt place, when immediately from the open air we ſtep into ſuch a

Principles. a room, its ſize in appearance is diminiſhed by contraſt; it looks little, compared with the great canopy of the ſky. In the next place, when it recovers its grandeur, as it ſoon doth, it gives a diminutive appearance to the reſt of the houſe; paſſing from it, every apartment looks little. In the third place, by its ſituation it ſerves only for a waiting room, and a paſſage to the principal apartments. Rejecting therefore this form, a hint may be taken from the climax in writing for another that appears more ſuitable: A handſome portico, proportioned to the ſize and faſhion of the front, leads into a waiting room of a larger ſize, and this to the great room, all by a progreſſion of ſmall to great.

Grandeur is the principal emotion that architecture is capable of raiſing in the mind: it might therefore be the chief ſtudy of the artiſt, in great buildings deſtined to pleaſe the eye. But as grandeur depends partly on ſize, it is unlucky for architecture that it is governed by regularity and proportion, which never deceive the eye by making objects appear larger than they are in reality. But though regularity and proportion contribute nothing to grandeur, ſo far as that emotion depends on ſize; yet they contribute greatly to it by confining the ſize within ſuch bounds that it can be taken in and examined at one view; for when objects are ſo large as not to be comprehended but in parts, they tend rather to diſtract than ſatisfy the mind.

We ſhall next paſs to ſuch ornaments as contribute to give buildings a peculiar expreſſion. It has been doubted, whether a building can regularly admit any ornament but what is uſeful, or at leaſt has that appearance. But, conſidering the double aim of architecture, as a fine as well as an uſeful art, there is no reaſon why ornaments may not be added to pleaſe the eye, without any relation to utility. A private dwelling houſe, it is true, and other edifices, where uſe is the chief aim, admit not regularly any ornament but what has at leaſt the appearance of uſe; but temples, triumphal arches, and other buildings, intended chiefly or ſolely for ſhow, may be highly ornamented.

32 Different kinds of ornaments. This ſuggeſts a diviſion of ornaments into three kinds, viz. 1. Ornaments that are beautiful without relation to uſe; ſuch as ſtatues, vaſes, baſſo or alto relievo: 2. Things in themſelves not beautiful, but poſſeſſing the beauty of utility, by impoſing on the ſpectator, and appearing to be uſeful; ſuch as blind windows: 3. Where things are beautiful in themſelves, and at the ſame time take on the appearance of uſe; ſuch as pilaſters.

With regard to the *firſt*, we naturally require that a ſtatue be ſo placed, as to be ſeen in every direction, and examined at different diſtances. Statues, therefore, are properly introduced to adorn the great ſtair that leads to the principal door of a palace, or to leſſen the void between pillars. But a niche in the external front is an improper place for a ſtatue. There is an additional reaſon againſt placing them upon the roof or top of the walls: their tickliſh ſituation gives pain, as they have the appearance of being in danger of tumbling down; beſides, we are inclined to feel from their being too much expoſed to the inclemencies of the weather. To adorn the top of the wall with a row of vaſes, is an unhappy conceit, by placing a thing, whoſe natural deſtination is utility, where it cannot have even the appearance of uſe. As to carvings upon the external ſurface of a building, termed *baſſo relievo* when flat, and *alto relievo* when prominent, all contradictory expreſſions ought to be avoided. Now, firmneſs and ſolidity being the proper expreſſions of a pedeſtal, and, on the contrary, lightneſs and delicacy of carved work, the pedeſtal, whether of a column or of a ſtatue, ought to be ſparingly ornamented. The ancients never ventured any bolder ornament than the baſſo relievo. Principles.

With reſpect to ornaments of the *ſecond* kind, it is a great blunder to contrive them ſo as to make them appear uſeleſs. A blind window, therefore, when neceſſary for regularity, ought to be ſo diſguiſed as to appear a real window: when it appears without diſguiſe, it is diſguſtful, as a vain attempt to ſupply the want of invention; it ſhows the irregularity in a ſtronger light, by ſignifying that a widow ought to be there in point of regularity, but that the architect had not ſkill ſufficient to connect external regularity with internal convenience.

As to the *third*, it is an error to ſink pilaſters ſo far into the wall, as to remove totally, or moſtly, the appearance of uſe. They ſhould always project ſo much from the wall, as to have the appearance of ſupporting the entablature over them.

33 Columns. From ornaments in general, we deſcend to a pillar, the chief ornament in great buildings. The deſtination of a pillar is to ſupport, really, or in appearance, another part, termed the *entablature*. With regard to the form of a pillar, it muſt be obſerved, that a circle is a more agreeable figure than a ſquare, a globe than a cube, and a cylinder than a parallelopipedon. This laſt, in the language of architecture, is ſaying, that a column is a more agreeable figure than a pilaſter; and for that reaſon it ought to be preferred, when all other circumſtances are equal. Another reaſon concurs, that a column annexed to a wall, which is a plain ſurface, makes a greater variety than a pilaſter. Beſides, pilaſters at a diſtance are apt to be miſtaken for pillars; and the ſpectator is diſappointed, when, on a nearer approach, he diſcovers them to be only pilaſters.

As to the parts of a column, a bare uniform cylinder, without a capital, appears naked; and without a baſe, appears too tickliſhly placed to ſtand firm; it ought therefore to have ſome finiſhing at the top and bottom: Hence the three chief parts of a column, the ſhaft, the baſe, and the capital. Nature undoubtedly requires proportion among theſe parts, but it admits of variety of proportion. Vitruvius and ſome of the elder writers ſeem to think, that the proportions of columns were derived from the human figure, the capital repreſenting the head, the baſe the feet, and the ſhaft the body. The Tuſcan has been accordingly denominated the *Gigantic*; the Doric, the *Herculean*; the Ionic, the *Matronal*; and the Corinthian, the *Virginal*;—The compoſite is a mixture of the Corinthian and Ionic. As to the baſe, the principle of utility interpoſes to vary it from the human figure, and to proportion it ſo to the whole, as to give the column the appearance of ſtability.

34 Whether new orders can be invented. Among the Greeks, we find only three orders of columns, the Doric, the Ionic, and the Corinthian, diſtinguiſhed

Principles. ſtinguiſhed from each other by their deſtination as well as by their ornaments. It has been diſputed, whether any new order can be added to theſe: ſome hold the affirmative, and give for inſtances the Tuſcan and Compoſite: others maintain, that theſe properly are not diſtinct orders, but only the original orders with ſome ſlight variation. The only circumſtances that can ſerve to diſtinguiſh one order from another, are the form of the column, and its deſtination. To make the firſt a diſtinguiſhing mark, without regard to the other, would multiply orders without end. Deſtination is more limited, and it leads us to diſtinguiſh three kinds of orders; one plain and ſtrong for the purpoſe of ſupporting plain and maſſy buildings; one delicate and graceful, for ſupporting buildings of that character; and between theſe, a third, for ſupporting buildings of a mixed nature. So that, if deſtination alone is to be regarded, the Tuſcan is of the ſame order with the Doric, and the Compoſite with the Corinthian.

The ornaments of theſe three orders ought to be ſuited to the purpoſes for which they are intended. Plain and ruſtic ornaments would not be a little diſcordant with the elegance of the Corinthian order, and ſweet and delicate ornaments not leſs with the ſtrength of the Doric.

35 Rules regarding buildings in general. With reſpect to buildings of every kind, one rule, dictated by utility, is, that they be firm and ſtable. Another, dictated by beauty, is, that they alſo appear ſo to the eye: for every thing that appears tottering, and in hazard of tumbling down, produceth in the ſpectator the painful emotion of fear, inſtead of the pleaſing emotion of beauty; and accordingly it ſhould be the great care of the artiſt, that every part of his edifice appear to be well ſupported. Some have introduced a kind of conceit in architecture, by giving parts of buildings the appearance of falling; of this kind is the church of Sophia in Conſtantinople; the round towers in the uppermoſt ſtories of Gothic buildings are in the ſame falſe taſte.

The moſt conſiderable ornaments uſed in architecture are five orders of columns, pediments, arches, balluſters, &c. of which in the following chapters.

Chap. I. *Of the Orders of Architecture.*

An order conſiſts of two principal members, the Column and the Entablature; each of which is compoſed of three principal parts. Thoſe of the columns are, the *Baſe*, the *Shaft*, and the *Capital*; and thoſe of the Entablature are, the *Architrave*, the *Frize*, and the *Cornice*. All theſe are ſubdivided into many leſſer parts, whoſe number, form, and dimenſions, characterize each order, and expreſs the degree of ſtrength, delicacy, richneſs, or ſimplicity peculiar to it.

36 Parts of an order divided into two claſſes. The parts that compoſe an order may be diſtributed into two different claſſes. In the *firſt* may be ranged all that have any analogy to the primitive huts, and repreſent ſome part that was neceſſary in their conſtruction. Such are the ſhaft of the column, with the plinth of the baſe, and the abacus of its capital; likewiſe the architrave and triglyphs, the mutules, modilions, or dentiles, which all of them repreſent the rafters, or ſome other pieces of timber uſed to ſupport the covering; and the corona, repreſenting the beds of materials that compoſed the covering. All theſe may properly be diſtinguiſhed by the name of *eſſential members*. The ſubſervient parts, contrived for the uſe or ornament of the former, and commonly called *mouldings*, may conſtitute the *ſecond* claſs. Principles.

There are eight regular mouldings in ornamenting columns: the fillet, liſtel, or ſquare; the aſtragal, or bead; the torus, or tore; the ſcotia, mouth, or caſement; the echinus, ovolo, or quarter-round; the inverted cyma, talon, or ogee; the cyma, cyma recta, or cymation; the cavetto, or hollow. The names of theſe allude to their forms, and their forms are adapted to the purpoſes for which they are intended. See Plate XLII.

The ovolo and talon, as they are ſtrong at the extremities, are fit for ſupports; the cyma and cavetto, though improper for ſupports, ſerve for coverings to ſhelter other members; the torus and aſtragal, being ſhaped like ropes, are intended to bind and fortify the parts with which they are connected: But the uſe of the ſcotia and fillet is only to ſeparate and diſtinguiſh the other mouldings, to give a graceful turn to the profile, and to prevent the confuſion which would ariſe from jointing ſeveral curved members together.

There are various methods of deſcribing the contours of mouldings; but the ſimpleſt and beſt is to form them of quadrants of circles.

37 Profile, what. An aſſemblage of what are called eſſential parts and mouldings is termed a *profile*. The moſt perfect profiles are ſuch as are compoſed of few mouldings, varied in form and ſize; and ſo diſpoſed, that the ſtraight and curved ones ſucceed each other alternately. When ornaments are employed in mouldings, ſome of them ſhould be left plain, in order to give a proper repoſe: For when all are ornamented, the figure of the profile is loſt.

38 Diminution of columns. Columns, in imitation of trees, from which they drew their origin, are tapered in their ſhafts. In the antiques the diminution is variouſly performed: beginning ſometimes from the foot of the ſhaft, and at others from one quarter, or one-third of its height; the lower part being perfectly cylindrical. The former of theſe was moſt in uſe amongſt the ancients, and being the moſt natural and graceful, ought to have the preference, though the latter hath been more univerſally practiſed by modern artiſts.

The firſt architects, ſays M. Auzoult, probably made their columns in ſtraight lines, in imitation of trees; ſo that their ſhaft was a fruſtum of a cone; but finding this form abrupt and diſagreeable, they made uſe of ſome curve, which, ſpringing from the extremities of the ſuperior and inferior diameters of the column, ſwelled beyond the ſides of the cone, and by that means gave a more pleaſing figure to the contour.

Vitruvius, in the ſecond chapter of his third book, mentions this practice, but in ſo obſcure and curſory a manner, that his meaning hath not been underſtood; and ſeveral of the modern architects, intending to conform themſelves to his doctrine, have made the diameters of their columns greater in the middle than at the foot of the ſhaft. Leon Baptiſta, Alberti, and others of the Florentine and Roman architects, have carried

Principles. carried this to a very great excefs; for which they have been juftly blamed, as it is neither natural, reafonable, nor beautiful.

Monfieur Auzoult obferves, that a column, fuppofing its fhafts to be the fruftum of a cone, may have an additional thicknefs in the middle, without being fwelled there beyond the bulk of its inferior parts; and fuppofes the addition mentioned by Vitruvius to fignify nothing but the increafe towards the middle of the column, occafioned by changing the ftraight line, which at firft was in ufe, for a curve.

The fuppofition is extremely juft, and founded on what is obferved in the works of antiquity; where there is no inftance of columns thicker in the middle than at the bottom, though all have the fwelling hinted at by Vitruvius, all of them being terminated by curves; fome granite columns excepted, which are bounded by ftraight lines; a proof, perhaps, of their antiquity, or of their having been wrought in the quarries of Egypt by bungling and unfkilful workmen.

Monfieur Blondel, in his book entitled *Refolution des quatre principaux problemes d'Architecture*, teaches various manners of diminifhing columns; the beft and fimpleft of which is by means of the inftrument which Nicomedes invented to defcribe the firft conchoid: for this, being applied at the bottom of the fhaft, performs at one fweep both the fwelling and the diminution; giving fuch a graceful form to the column, that it is univerfally allowed to be the moft perfect practice hitherto difcovered. The columns in the Pantheon, accounted the moft beautiful among the antiques, are made in this manner; as appears by the exact meafures of one of them to be found in Defgodet's antiquities of Rome.

39 Vignola's method. To give an accurate idea of the operation, it will be neceffary firft to defcribe Vignola's method of diminution, on which it is grounded. "As to this fecond method, fays Vignola, it is a difcovery of my own, and although it be lefs known than the former, it will be eafily comprehended by the figure. Having therefore determined the meafures of your column, (that is to fay, the height of the fhaft, and its inferior and fuperior diameters), draw a line indefinitely from C through D, perpendicular to the axis of the column: this done, fet off the diftance CD, which is the inferior femi-diameter, from A, the extreme point of the fuperior femi-diameter, to B, a point in the axis; then from A, through B, draw the line ABE, which will cut the indefinite line CD in E; and, from this point of interfection E, draw through the axis of the column any number of rays, as E b a, on each of which, from the axis towards the circumference, fetting off the interval CD, you may find any number of points, a, a, a, through which if a curve be drawn, it will defcribe the fwelling and diminution of the column."

Plate XXXVII.

40 Nicomedes's inftrument. Though this method be fufficiently accurate for practice, efpecially if a confiderable number of points be found, yet ftrictly fpeaking, it is defective; as the curve muft either be drawn by hand, or by applying a flexible ruler to all the points; both of which are liable to variations. Blondel, therefore, to obviate this objection, (after having proved the curve paffing from A to C through the points a, a, to be of the fame nature with the firft conchoid of the ancients), employed the inftrument of Nicomedes to defcribe it; the conftruction of which is as follows: Principles.

Having determined, as above, the length of the fhaft, with the inferior and fuperior diameters of the column, and having likewife found the length of the line CDE, take three rulers, either of wood or metal, as FG, ID, and AH; of which let FG and ID be faftened together at right angles in G. Cut a dovetail groove in the middle of FG, from top to bottom; and at the point E on the ruler ID (whofe diftance, from the middle of the groove in FG, is the fame as that of the point of interfection from the axis of the column) fix a pin; then on the ruler AH fet off the diftance AB, equal to CD the inferior femi-diameter of the column, and at the point fix a button, whofe head muft be exactly fitted to the groove made in FG, in which it is to flide; and, at the other extremity of the ruler AH, cut a flit or canal from H to K, whofe length muft not be lefs than the difference of length between EB and ED, and whofe breadth muft be fufficient to admit the pin fixed at E, which muft pafs through the flit, that the ruler may flide thereon.

The inftrument being thus completed, if the middle of the groove, in the ruler FG, be placed exactly over the axis of the column, it is evident that the ruler AH, in moving along the groove, will with the extremity A defcribe the curve A a a C; which curve is the fame as that produced by Vignola's method of diminution, fuppofing it done with the utmoft accuracy; for the interval AB, a b, is always the fame; and the point E is the origin of an infinity of lines, of which the parts BA, ba, ba, extending from the axis to the circumference, are equal to each other and to DC. And if the rulers be of an indefinite fize, and the pins at E and B be made to move along their refpective rulers fo that the intervals AB and DE may be augmented or diminifhed at pleafure, it is likewife evident that the fame inftrument may be thus applied to columns of any fize.

41 Quantity of diminution. In the remains of antiquity the quantity of the diminution is various; but feldom lefs than one-eighth of the inferior diameter of the column, nor more than one-fixth of it. The laft of thefe is by Vitruvius efteemed the moft perfect.

Of the Tuscan Order.

42 Plate XXXIX. This is the moft folid and fimple of all the orders. It is compofed of few parts, devoid of ornaments, and fo maffy, that it feems capable of fupporting the heavieft burden. There are no remains of a regular Tufcan order among the antiques: the doctrine of Vitruvius concerning it is obfcure; and the profiles of Palladio, Scamozzi, Serlio, de l'Orme and Vignola, are all imperfect.

The height of the Tufcan column is 14 modules, or femi-diameters, each confifting of 30 minutes; and that of the whole entablature $3\frac{1}{2}$ modules; which being divided into equal parts, three of them are for the height of the architrave, three for the frize, and the remaining four for the cornice. The capital is one module; the bafe, including the lower cincture of the fhaft is likewife one module; and the fhaft, with its upper cincture and aftragal, 12 modules.

Thefe are the general dimenfions of the order; the

Principles. particular dimenſions may be learned by inſpection of the plates.

In the remains of antiquity, the quantity of diminution at the top of the Tuſcan column is various; but ſeldom leſs than one-eighth, nor more than one-ſixth, of the inferior diameter of the column. The laſt of theſe is generally preferred; and Chalmers and others make the ſame diminution in all columns, without regard to their order.

Of the Doric Order.

43 Plate XL. This order is next in ſtrength to the Tuſcan; and being of a grave, robuſt, and maſculine aſpect, is by Scamozzi called the *Herculean*. As it is the moſt ancient of all the orders, it retains more of the ſtructure of the primitive huts than any of the reſt; the triglyphs in its frize repreſenting the ends of the joiſts, and the mutules in its cornice repreſenting the rafters.

The height of the Doric column, including its capital and baſe, is 16 modules, and the height of the entablature four; the latter of which being divided into eight parts, two of them are for the architrave, three for the frize, and three for the cornice.

In moſt of the antiques, the Doric column is executed without a baſe. Vitruvius likewiſe makes it without one; the baſe, according to him, having been firſt employed in the Ionic order, in imitation of the ſandal of a woman's foot. Scamozzi blames this practice, and moſt of the modern architects are of his opinion.

44 Ornaments of the frize. In the profile of the theatre of Marcellus, the frize is enriched with huſks and roſes; the architrave conſiſts only of one faſcia and a fillet; the drops are conical; the metope is enriched with a bull's ſkull, adorned with a garland of beads, in imitation of thoſe on the temple of Jupiter Tonans, at the foot of the Capitol. In ſome antique fragments, and in a great many modern buildings, the metopes are alternately adorned with ox ſkulls and pateras. But they may be filled with any other ornaments, according to the deſtination of the building.

The Ionic Order

45 Plate XLI. Is of a more ſlender make than the Doric or Tuſcan; its appearance is ſimple, yet graceful and majeſtic; its ornaments are few: ſo that it has been compared to a ſedate matron, in decent, rather than magnificent, attire.

Among the ancients, the form of the Ionic profile appears to have been more poſitively determined than that of any other order; for in all the antiques at Rome (the temple of Concord excepted), it is exactly the ſame.

The modern artiſts have likewiſe been unanimous in their opinions; all of them, excepting Palladio and his imitators, having employed the dentil, cornice, and the other parts of the profile, nearly as they are found in the Coliſeum, the temple of Fortune, and the theatre of Marcellus.

The height of the Ionic column is 18 modules, and that of the entablature $4\frac{1}{2}$, or one quarter of the height of the column, as in the other orders, which is a trifle leſs than in any of the antique Ionics. In all the antiques, the baſe is Attic; and the ſhaft of the column may either be plain, or fluted with 24 flutings, or 20 only, as in the temple of Fortune. The plan of the flutings may be a trifle more than a ſemicircle, as in the forum of Nerva, becauſe they then appear more diſtinct. The fillets, or intervals between them, muſt not be broader than one-third of the breadth of a fluting, nor narrower than one-fourth. The ornaments of the capital muſt correſpond with the flutings of the ſhaft; and there muſt be an ove above the middle of each fluting. The volutes ought to be traced according to Mr Goldman's method, which is as follows: Principles.

46 Method of drawing volutes. Plate XLII. fig. 9. Draw the cathetus, FC, whoſe length muſt be 15 minutes, or one-fourth of a module: and from the point C, deſcribe the eye of the volute AEBD, of which the diameter is to be $6\frac{2}{3}$ minutes; divide it into four equal ſectors by the diameters AB, DE. Biſect the radii CA, CB, in 1 and 4; and on the line 1, 4, conſtruct a ſquare, 1, 2, 3, 4. From the centre C, to the angles 2, 3, draw the diagonals C 2, C 3, and divide the ſide of the ſquare 1, 4, into ſix equal parts, at 5, 9, C, 12, 8. Then through the points, 5, 9, 12, 8, draw the lines 5, 6, 9, 10, 12, 11, 8, 7, parallel to the diameter ED, which will cut the diagonals in 6, 7, 10, 11; and the points, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, will be the centres of the volute. From the firſt centre 1, with the diſtance 1 F, deſcribe the quadrant FG; from the ſecond centre 2, with the diſtance 2 G, deſcribe the quadrant GH; and continuing the ſame operation from all the 12 centres, the contour of the volute will be completed.

Fig. 10. The centres for deſcribing the fillet are found in this manner. Conſtruct a triangle, of which the ſide AF is equal to the part of the cathetus contained between AF and the ſide FV, equal to C 1; place the diſtance FS from F towards A, equal to FS the breadth of the fillet, and through the point S draw the line ST, which will be to C 1 in the ſame proportion as AS is to AF; place this line on the diameter of the eye AB: divide it into three equal parts; and through the points of diviſion, draw lines parallel to the diameter ED, which will cut the diagonals C 2, C 3, and you will have twelve new centres, from whence the interior contour of the fillet may be deſcribed in the ſame manner as the exterior one was from the firſt centres.

Of the Corinthian Order.

47 Plate XLIII. The proportions of this order are extremely delicate. It is divided into a great variety of members, and enriched with a profuſion of ornaments. Scamozzi calls it the *virginal order*; and indeed it has all the delicacy in its make, and all the delicacy in its dreſs, peculiar to young girls.

The moſt perfect model of the Corinthian order is generally allowed to be in the three columns in the Campo Vaccino at Rome, the remains, as it is thought, of the temple of Jupiter Stator.

The Corinthian column ſhould be 20 modules high, and the entablature 5; which proportions are a medium between thoſe of the Pantheon and the three columns. The baſe of the column may be either Attic or Corinthian: They are both beautiful. If the entablature be enriched, the ſhaft may be fluted. The flutings may be filled, to one-third of their height, with cabblings, as in the inſide of the Pantheon; which will ſtrengthen

Principles. ſtrengthen the lower part of the column, and make it leſs liable to injury.

In moſt of the antiques at Rome, the capital of this order is enriched with olive leaves; the acanthus being ſeldom employed but in the Compoſite. De Cordemoy, however, prefers the acanthus.

The diviſions of the entablature bear the ſame proportions to each other, as the Tuſcan, Ionic, and Compoſite orders.

The Composite.

48 Plate XLIV. Is, ſtrictly ſpeaking, only a ſpecies of the Corinthian; and therefore retains, in a great meaſure, the ſame character.

49 Different kinds of ornaments. It does not appear that the ancients affected any particular form of entablature to this order. Sometimes the cornice is entirely plain, as in the temple of Bacchus; at others, as in the arch of Septimius Severus, it is enriched with dentils differing very little from the Ionic; and in the arch of Titus, there are both dentils and modilions; the whole form of the profile being the ſame with the Corinthian, as executed in the antiques at Rome.

The modern architects have varied more in this than in any other order, each following the bent of his own fancy.

The height of the Compoſite column, and parts of the entablature, is the ſame with that of the Corinthian. The foot of the leaves of the capital ought not to project beyond the upper part of the ſhaft. The different bunches of leaves ſhould be ſtrongly marked; the ſprigs which ariſe between the upper ones ſhould be kept flat upon the vaſe; and the ornaments of the volutes muſt not project beyond the fillets that encloſe them.

Chap. II. *Of Pilaſters.*

50 These differ from columns only in their plan; which is a ſquare, as that of columns is round. Their baſes, capitals and entablatures, have the ſame parts, with the ſame heights and projections, as thoſe of columns: they are alſo diſtinguiſhed in the ſame manner, by the names of Tuſcan, Doric, Ionic, Corinthian, and Compoſite.

The column is undoubtedly more perfect than the pilaſter. However, they may be employed with great propriety on many occaſions. Some authors declaim againſt pilaſters, becauſe, according to them, they do not admit of diminution. But this is a miſtake; there are many inſtances in the remains of antiquity, of their being diminiſhed. Scamozzi always gave his pilaſters the ſame diminution as his columns: Palladio and Inigo Jones have likewiſe diminiſhed them in many of their buildings.

51 Pilaſters, where uſeful. Pilaſters are employed in churches, galleries, halls, and other interior decorations, to ſave room; for, as they ſeldom project beyond the ſolid wall above one quarter of their diameter, they do not occupy near ſo much ſpace as columns. They are likewiſe uſed in exterior decorations; ſometimes alone, inſtead of columns, on account of their being leſs expenſive; and ſometimes they accompany columns, being placed behind them to ſupport the architraves, where they enter the building, as in the Pantheon at Rome; or, in the ſame line with them, to fortify the angles, as in the portico of Septimius. Principles.

When pilaſters are uſed alone, they ſhould project one quarter of their diameter beyond the walls. When placed behind columns, eſpecially if they be very near them, they need not project above one-eighth of their diameter. But, when placed on a line with columns, their projection muſt be regulated by that of the columns; and conſequently, it can never be leſs than a ſemidiameter, even when the columns are engaged as much as poſſible.

52 How ornamented. The ſhafts of pilaſters are frequently adorned with flutings, in the ſame manner as thoſe of columns; the plan of which may be a trifle more than a ſemicircle; their number muſt be ſeven on each face, which makes them nearly of the ſame ſize with thoſe of columns. The intervals, or fillets, muſt either be one-third or one-fourth of the fluting in breadth.

The capitals of pilaſters are profiled nearly in the Plate XLV. ſame manner as thoſe of columns.

Chap. III. *Of Attics.*

53 These very properly follow the pilaſters; being nothing more than ſquare pillars with their cornices. They had their origin in Athens, where it was for many ages a rule in building to conceal the roof. For this purpoſe, nothing ſerved ſo well as a kind of low or little order ranged in a continued line, ſingly, or with the interruption of balluſters; which, riſing above the reſt of the work and before the roof, hid it perfectly, and placed ſomething agreeable in view. The place of Attics, therefore, is at the uppermoſt extremity of a building, to which they ſerve as a crown, or very properly make a finiſhing for the other orders when they have been uſed in the ſtructure. They muſt never ſtand under any thing except ſuch ornaments as are placed at the very top. Theſe Attics ſhould never exceed in height one-third of the height of the order on which they are placed, nor be leſs than one quarter of it. The baſe, dye, and cornice, of which they are compoſed, may bear the ſame proportions to each other as thoſe of pedeſtals do; and the baſe and cornice may be compoſed of the ſame mouldings as thoſe of pedeſtals. Sometimes the Attic is continued throughout; at others, it projects, and forms a pilaſter over each column of the order. The breadth of this pilaſter is ſeldom made narrower than the upper diameter of the column below it, and never broader. Its projection may be equal to one quarter of its breadth.

Chap. IV. *Of Perſians, Caryatides, and Termini.*

54 Beſides columns and pilaſters, it is ſometimes cuſtomary to employ repreſentations of the human figure, to ſupport entablatures in buildings. The male figures are called *Perſians*; and the female, *Carians*, or *Caryatides*.

55 Origin of Perſians. The *Perſians* are ſo called from a victory gained over the Perſians, by Pauſanias, who having brought home ſpoils and trophies to the Athenians, they fixed upon Perſian figures for thoſe which ſhould ſupport entablatures, and thus kept in mind that there were once Perſian ſlaves in Athens. To repreſent theſe con-

Principles. quered people in the loweſt ſtate poſſible, they loaded them with the heavieſt entablature, viz. that of the Doric order. In proceſs of time, however, other figures beſides thoſe of Perſians were introduced, and other entablatures put over them; but the name was ſtill retained.

56 Of Caryatides. The proper Caryatides are women dreſſed in long robes, after the Aſiatic manner; and the origin of the device was as follows:—The Carians had been long at war with the Athenians; but being at length totally vanquiſhed, their wives were led away captives; and, to perpetuate the memory of this event, trophies were erected, in which figures of women dreſſed in the Caryatic manner, were uſed to ſupport entablatures like the Perſians; and though other female figures were afterwards uſed in the ſame manner, the name of *Caryatides* was always retained.

The ancients made frequent uſe of Perſians and Caryatides, and delighted in diverſifying them a thouſand ways. The modern artiſts have followed their examples; and there is a great variety of compoſitions of this kind to be met with in different parts of Europe.

Indecent attitudes, diſtorted features, and all monſtrous productions, ought to be avoided, of which there are many examples in Gothic buildings. On the contrary, the attitudes ſhould be ſimple and graceful, the countenance always pleaſing, though varied and ſtrongly marked agreeable to the nature of the object repreſented.

57 Their proportions, &c. The Caryatides, or female figures, ſhould never much exceed the human ſize. But the Perſians, or male figures, may be of any ſize; and the larger the better, as they will ſtrike the beholder with the greater awe and aſtoniſhment. Perſians may be uſed with propriety in arſenals, galleries of armour, &c. under the figures of captives, heroïc virtues, &c. Their entablature ought to be Doric, and bear the ſame proportion to them as to columns of the ſame height. The entablature for Caryatides ought to be either Ionic or Corinthian, according as the character of the figures is more or leſs delicate.

58 Termini. Termini are ſometimes employed, inſtead of Perſians or Caryatides, to ſupport the entablatures of monuments, chimney-pieces, and ſuch like compoſitions. Theſe figures owe their origin to the ſtones uſed by the ancients to mark the limits of particular poſſeſſions. Numa Pompilius, to render theſe inviolable, conſecrated the terminus into a deity, and inſtituted feſtivals and ſacrifices to his honour. In a ſhort time, what were formerly only large upright ſtones, were repreſented in human ſhape; and afterwards introduced as ornaments to temples and other buildings. The termini are now principally uſed as ornaments for gardens and fields.

Chap. V. *Of Pedeſtals.*

59 Moſt writers conſider the *pedeſtal* as a neceſſary part of the order, without which it is not complete. It is indeed a matter of little importance whether it be conſidered in that light, or as a diſtinct compoſition: we ſhall therefore treat of a pedeſtal as a diſtinct body, having no more connexion with the order than an attic, a baſement, or any other part with which it may on ſome occaſions be aſſociated.

A pedeſtal conſiſts of three principal parts: the baſe, the dye, and the cornice. The dye is always nearly of the ſame figure; being conſtantly either a cube or a parallelopipedon: but the baſe and cornice are varied and adorned with more or fewer mouldings, according to the ſimplicity or richneſs of the compoſition in which the pedeſtal is employed. Hence pedeſtals are, like columns, diſtinguiſhed by the names of *Tuſcan*, *Doric*, *Ionic*, *Corinthian*, and *Compoſite*. Principles.

60 Pedeſtals, where proper. Some authors are averſe to pedeſtals, and compare a column raiſed on a pedeſtal to a man mounted on ſtilts; imagining that they were introduced merely from neceſſity, and for want of columns of a ſufficient length. It is indeed true, that the ancients often made uſe of artifices to lengthen their columns; as appears by ſome that are in the Baptiſtery of Conſtantine at Rome; the ſhafts of which, being too ſhort for the building, were lengthened and joined to their baſes by an undulated ſweep, adorned with acanthus leaves. Nevertheleſs, there are many occaſions where pedeſtals are evidently neceſſary; and ſome in which the order, were it not ſo raiſed, would loſe much of its beautiful appearance. Thus, in the inſides of churches, if the columns that ſupport the vault were placed immediately on the ground, the ſeats would hide their baſes and a good part of their ſhafts; and in the theatres of the ancients, if the columns of the ſcene had been placed immediately on the ſtage, the actors would have hid a part of them from the audience. In anterior decorations, a pedeſtal diminiſhes the parts of the order, which otherwiſe might perhaps appear too clumſy, and hath the advantage of placing the column in a more favourable view, by raiſing its baſe nearer the level of the ſpectator's eye. In a ſecond order of arcades, there is no avoiding pedeſtals; as without them it is impoſſible to give the arches any tolerable proportion.

61 Their proportions. With regard to the proportion that pedeſtals ought to bear to that of the columns they ſupport, it is by no means fixed. Both the ancients and moderns vary greatly on this head. Vignola's proportions are generally reckoned the beſt. He makes his pedeſtals in all the orders of the ſame height, viz. one-third of the column; and as their breadth of courſe increaſes or diminiſhes in the ſame degree as the diameters of their reſpective columns do, the character of the order is always preſerved, which, according to any other method, is impoſſible.

As to the diviſions of the pedeſtals; if the whole height be divided into nine parts, one of them may be given to the height of the cornice, two to the baſe, and the ſix remaining to the dye. The breadth of the dye is always made equal to that of the plinth of the column. The projection of the cornice may be made equal to its height; and the baſe being divided into three parts, two of them will be for the height of the plinth, and one for the mouldings, whoſe projection muſt be leſs than that of the cornice. Theſe meaſures are common to all pedeſtals. See Plate XLV.

Chap. VI. *Of Intercolumniations.*

62 Columns are either engaged, or inſulated; and, when inſulated, are either very near the wall, or at a conſiderable diſtance from it. Engaged columns, or ſuch as are near the walls of a building, are not limited

Principle. in their intercolumniations, as theſe depend on the breadths of the arches, windows, niches, or other decorations placed between the columns. But columns that are entirely detached, and perform alone the office of ſupporting the entablature, as in periſtyles, porches and galleries, muſt be near each other, for the ſake both of real and apparent ſolidity.

63 Different intercolumniations uſed by the ancients.

The intercolumniations among the ancients were various. Thoſe uſed in the Ionic and Corinthian orders were the pycnoſtyle, of which the interval was equal to one diameter and a half of the column; the ſyſtyle whoſe interval was equal to two diameters: the euſtyle, to two and a quarter; the diaſtyle to three, and the araeoſtyle to four. In the Doric order, they uſed other intercolumniations, regulating them by the triglyphs, one of which was always placed directly over the middle of each column; ſo that they were either ſyſtyle, monotriglyph, of one diameter and a half; diaſtyle, of two diameters and three quarters; or araeoſtyle of four diameters; and the Tuſcan intervals were very wide, ſome of them being above ſeven diameters, which was very practicable, as the architraves were of wood.

Among theſe different intercolumniations, the pycnoſtyle and ſyſtyle are too narrow; for although the ancients made frequent uſe of them, that ought rather to be aſcribed to neceſſity than choice. For as the architraves were compoſed of ſingle ſtones, extending from the middle of one column to the middle of another, it would have been difficult, eſpecially in large buildings, to find blocks of a ſufficient length for diaſtyle intervals. With regard to the araeoſtyle and Tuſcan intercolumniations, they are by much too wide, and can only be uſed in ruſtic buildings, where the architraves are of wood; neither is the diaſtyle ſufficiently ſolid in large compoſitions. The euſtyle is a medium between the narrow and broad intervals; and being at the ſame time both ſpacious and ſolid, hath been preferred to any of the reſt by the ancients as well as the moderns.

64 Uſed by Vignola.

Vignola obſerved nearly the ſame proportion in all his intercolumniations; which practice, though condemned by ſeveral writers, is certainly preferable to any other; as it preſerves the character of each order, and maintains in all of them an equal degree of real ſolidity. Setting aſide therefore the pycnoſtyle and ſyſtyle diſpoſitions on account of their want of ſpace, and the araeoſtyle for its deficiency in point of ſtrength, it may be eſtabliſhed, that the diaſtyle and euſtyle intercolumniations (the latter of which on moſt occaſions, ought to have the preference) may be employed in all the orders without diſtinction, excepting the Doric; in which the moſt perfect interval is ditriglyph; neither the monotriglyph, nor the araeoſtyle being to be ſuffered but in caſes of neceſſity.

Sometimes, on account of the windows, doors, niches, and other decorations, which correſpond with the intercolumniations of the periſtyle, or gallery, it is not poſſible to make the intervals ſo narrow as euſtyle, or even as diaſtyle: wherefore the moderns, authoriſed by ſome few examples of the ancients, where grouped columns are employed, have invented a manner of diſpoſing them, called by Perrault *araeoſtyle*, which admits of a larger interval, without any detriment to the apparent ſolidity of the building. This kind of compoſition is compoſed of two ſyſtyle intercolumniations, the column that ſeparates them being approached towards one of them at the extremities, ſufficient room only being left between them for the projection of the capitals; ſo that the one interval is three diameters and a half wide, and the little one half a diameter.

In periſtyles, galleries, or porticoes, all the intercolumniations muſt be equal; but in a logio, or [illegible], the middle interval may be broader than the other, by a triglyph or modilion, or three or four dentils; unleſs the columns at the angles be coupled or grouped with pilaſters; in which caſe, all the intervals ſhould be of the ſame dimenſions.

When buildings are very ſmall, as is frequently the caſe in temples and other inventions uſed for ornamenting gardens, the intercolumniations may be broader, in proportion to the diameter of the columns, than uſual; becauſe, when they are nearer each other than three feet, there is hardly room for a bulky perſon to paſs between them.

Chap. VII. *Of Arches.*

Arches, where proper.

Arches are not ſo magnificent as colonnades; but they are more ſolid and leſs expenſive. They are proper for triumphal entrances, gates of cities, of palaces, of gardens, and of parks, and, in general, for all openings that require an extraordinary breadth.

66 How adorned.

There are various manners of adorning arches. Sometimes their piers are ruſticated; ſometimes they are adorned with pilaſters, termini, or caryatides; and ſometimes they are made ſufficiently broad to admit niches or windows. The circular part of the arch is either ſurrounded with ruſtic key-ſtones, or with an archivolt enriched with mouldings; which, in the middle, is ſometimes interrupted by a conſole, a maſk, ſerving at the ſame time as a key to the arch, and as a ſupport to the architrave of the order. The archivolt is ſometimes ſupported by an impoſt, at the head of the pier; and at others by columns placed on each ſide of it, with a regular entablature, or architrave and cornice. There are likewiſe inſtances of arcades without piers, the arches being turned on ſingle columns as in the temple of Faunus at Rome, &c. This practice, however, ought to be ſeldom imitated, as it is neither ſolid nor handſome.

When arches are large, the key-ſtone ſhould never be omitted, but cut in the form of a conſole, and carried cloſe under the foffit of the architrave, which on account of its extraordinary length, requires a ſupport in the middle. The impoſts of arches ſhould never be omitted; at leaſt, if they be, a platform ought to ſupply their place. If columns are employed without pedeſtals in arcades, they ſhould always be raiſed on a plinth. In all arches, the circular part ought not to ſpring immediately from the impoſt, but take its riſe at ſuch a diſtance above it as is neceſſary in order to have the whole curve ſeen at the proper point of view.

The void or aperture of arches ſhould never be [illegible] higher nor much lower, than double their breadth; the breadth of the pier ſhould ſeldom exceed two-thirds, nor be leſs than one-third, of the breadth of the arch; and the angular pier ought to be broader than

Principles. than the others, by one-half, one-third, or one-fourth; the impoſt ſhould not be more than one-ſeventh, nor leſs than one-ninth of the aperture; and the archivolt muſt not be more than one-eighth, nor leſs than one-tenth of it. The breadth of the conſole muſt, at the bottom, be equal to that of the archivolt; and its ſides muſt be drawn from the centre of the arch: the length of it muſt not be leſs than one and a half of its ſmalleſt breadth, nor more than double. The thickneſs of the pier depends on the breadth of the portico; for it muſt be ſtrong enough to reſiſt the preſſure of its vault. But with regard to the beauty of the building, it ſhould not be leſs than one quarter of the breadth of the arch, nor more than one-third. Theſe are the general dimenſions of arches.

Chap. VIII. *Of Orders above Orders.*

68 When, in a building, two or more orders are employed, one above another, the laws of ſolidity require the ſtrongeſt ſhould be placed lowermoſt. Hence the Tuſcan muſt ſupport the Doric, the Doric the Ionic, the Ionic the Compoſite or Corinthian, and the Compoſite the Corinthian.

This rule, however, is not always ſtrictly adhered to. Moſt authors place the Compoſite above the Corinthian. There are likewiſe examples where the ſame order is repeated, as in the theatre of Statilius Taurus, and the Coliſeum; and others, where an intermediate order is omitted, and the Ionic placed on the Tuſcan, or the Corinthian on the Doric. But none of theſe practices ought to be imitated.

In placing columns above one another, the axis of all the columns ought to correſpond, or be in the ſame perpendicular line, at leaſt in front.

69 Proportions of columns placed above each other. With regard to the proportions of columns placed above each other, Scamozzi's rule, That the lower diameter of the ſuperior column ſhould conſtantly be equal to the upper diameter of the inferior one, is univerſally eſteemed the beſt, and gives all the columns the appearance of one long tapering tree, cut into ſeveral pieces. According to this rule, the Doric column will be to the Tuſcan, as $13\frac{1}{7}$ to 14; the Ionic to the Doric, as 15 to 16; the Compoſite or Corinthian to the Ionic, as $16\frac{1}{7}$ to 18; and the Corinthian to the Compoſite, as $16\frac{1}{7}$ to 20.

In Britain there are few examples of more than two ſtories of columns in the ſame aſpect; and though in Italy, and other parts of Europe, we frequently meet with three, and ſometimes more; yet it is a practice by no means to be imitated; for there is no poſſibility of avoiding many ſtriking inconſiſtencies, or of preſerving the character of each order in its intercolumnal decorations.

Chap. IX. *Of Baſements.*

70 Inſtead of employing ſeveral orders one above the other in a compoſition, the ground floor is ſometimes made in the form of a *baſement*, on which the order that decorates the principal ſtory is placed. The proportion of theſe baſements is not fixed, but depends on the nature of the rooms on the ground floor. In the palace of the Porti in Vicenza, the height of the baſement is equal to that of the order. In ſome buildings, its height exceeds two-thirds of that of the order; and, in others, only half the height of the order. It is not, however, adviſable to make the baſement higher than the order it ſupports: neither ſhould it be lower than one half of the order. Principles.

71 Decorations, &c. of baſements. The uſual method of decorating baſements is with ruſtics of different kinds. The beſt, where neatneſs and finiſhing is aimed at, are ſuch as have a ſmooth ſurface. Their height, including the joint, ſhould never be leſs, nor much more, than half a module of the order placed on the baſement. Their figure may be from a ſquare to a ſeſquialtera; and their joints may be either ſquare or chamfered. The ſquare ones ſhould not be broader than one-eighth of the height of the ruſtic, nor narrower than one-tenth; and their depth muſt be equal to their breadth; thoſe that are chamfered muſt form a rectangle; and the breadth of the whole joint may be from one-fourth to one-third of the height of the flat ſurface of the ruſtic.

Chap. X. *Of Pediments.*

72 Pediments, among the Romans, were uſed only as coverings to their ſacred buildings, till Cæſar obtained leave to cover his houſe with a pointed roof, after the manner of temples. In the remains of antiquity we meet with two kinds of pediments, the triangular and the circular. The former of theſe are promiſcuouſly applied to cover ſmall or large bodies: But the latter, being of a heavier figure, are never uſed but as coverings to doors, niches, windows, or gates.

As a pediment repreſents the roof, it ſhould never be employed but as a finiſhing to the whole compoſition.

The ancients introduced but few pediments into their buildings, uſually contenting themſelves with a ſingle one to adorn the middle or principal part. But ſome of the moderns, and particularly the Italians, have been ſo immoderately fond of them, that their buildings frequently conſiſt of almoſt nothing elſe.

The girder being a neceſſary part in the conſtruction of a roof, it is an impropriety to intermit the horizontal entablature of a pediment, by which it is repreſented, to make room for a niche, an arch, or a window.

73 Forms, &c. of pediments. In regular architecture, no other form of pediments can be admitted, beſides the triangular and circular. Both of them are beautiful; and when a conſiderable number of pediments are introduced, as when a range of windows are adorned with them, theſe two figures may be uſed alternately, as in the niches of the Pantheon, and in thoſe of the temple of Diana at Niſmes.

The proportion of pediments depends upon their ſize; for the ſame proportions will not do in all caſes.

When the baſe of the pediment is ſhort, its height muſt be increaſed; and when the pediment is long, the height muſt be diminiſhed. The beſt proportion for the height is from one-fifth to one-fourth of the baſe, according to the extent of the pediment, and the character of the body it covers. The materials of the roof muſt alſo be attended to; for if it be covered with tiles,

Principles. tiles, it will be neceſſary to raiſe it more than one quarter of the baſe, as was the cuſtom of the ancients in their Tuſcan temples.

The tympan is always on a line with the front of the frize; and when large, admits of various ornaments.

Chap. XI. *Of Balluſtrades.*

74 Ballustrades are ſometimes of real uſe in buildings; and at other times they are only ornamental. Such as are intended for uſe, as when they are employed in ſtaircaſes, before windows, or to encloſe terraſſes, &c. muſt always be nearly of the ſame height; never exceeding three feet and a half, nor ever leſs than three. But thoſe that are principally deſigned for ornament, as when they finiſh a building, ſhould be proportioned to the architecture they accompany: and their height ought never to exceed four-fifths of the height of the entablature on which they are placed; nor ſhould it ever be leſs than two-thirds thereof, without counting the zocholo, or plinth, the height of which muſt be ſufficient to leave the whole balluſtrade expoſed to view.

75 Proportion, &c. of balluſters. The beſt proportion for balluſtrades is to divide the whole given height into thirteen equal parts; eight of theſe for the height of the balluſter, three for the baſe, and two for the cornice or rail; or into fourteen, (if it be required to make the balluſter leſs), giving eight parts to the balluſter, four to the baſe, and two to the rail. One of theſe parts may be called a *module*; and being divided into nine minutes, may ſerve to determine the dimenſions of the particular members.

In balluſtrades, the diſtance between two balluſters ſhould not exceed half the diameter of the balluſter meaſured in its thickeſt part, nor be leſs than one-third of it.

The breadth of the pedeſtals, when they are placed on columns or pilaſters, is regulated by them; the dye never being made broader than the top of the ſhaft, nor much narrower; and when there are neither columns nor pilaſters on the front, the dye ſhould not be much lower than a ſquare, and ſeldom higher. On ſtairs, or any other inclined planes, the ſame proportions are to be obſerved as on horizontal ones.

Chap. XII. *Of Gates, Doors, and Piers.*

76 Doors and Gates. There are two kinds of entrances, viz. doors and gates. The former ſerve only for the paſſage of perſons on foot; but the latter likewiſe admit horſemen and carriages. Doors are uſed as entrances to churches and other public buildings, to common dwelling-houſes, and apartments: And gates ſerve for inlets to cities, fortreſſes, parks, gardens, palaces, &c. The apertures of gates being always wide, they are generally made in the form of an arch, that figure being the ſtrongeſt. But doors, which are generally of ſmall dimenſions, are commonly parallelograms, and cloſed horizontally.

The general proportion for the apertures, both of gates and doors, whether arched or ſquare, is, that the height be about double the breadth.

The moſt common, and indeed almoſt the only ornaments for gates are the piers by which they are ſupported, and which were originally no more than large poſts into which the hinges of the gate were driven. Piers. 77 Though this, however, is the only proper uſe of piers, it muſt be concealed as much as poſſible, and they muſt ſeem as if placed there only for ornament. As they are to be fixed to the wall before the houſe, ſo they muſt alſo be proportioned to it; and as they are to be ſeen in the ſame view with the front of the houſe, their correſpondence with it is equally neceſſary. They are to be placed on a plinth, and ſomething muſt be allowed by way of ornament and finiſhing at the top. All the luxuriance of fancy may be employed in the decoration of piers: but it will be proper to obſerve this general rule, that the pier being an inferior building, it muſt never be richer than the front of the houſe. If, for inſtance, the front of the houſe is ornamented with columns of the Doric order, the Ionic muſt not be uſed in the piers; and it will be found better to omit columns altogether, than to make uſe of the Tuſcan order for piers in any caſe. If the Ionic or Corinthian orders are employed in the front of the houſe, the Doric or Ionic may be uſed with propriety in the piers. One piece of ornament is almoſt univerſal in piers, namely, a niche with its ſeat, made as if for the conveniency of weary travellers. On this account, it will be proper to raiſe the columns on pedeſtals, becauſe the continued moulding from their cap will be a good ornament under the niche. The baſe of the columns ought always to be the Attic.

Inſide doors, however ſmall the building may be, ſhould never be narrower than two feet nine inches; nor ſhould they ever, in private houſes, exceed three feet ſix inches in breadth, which is more than ſufficient to admit the bulkieſt perſon. Their height ſhould at leaſt be ſix feet three or four inches; otherwiſe a tall perſon cannot paſs without ſtooping. In churches, palaces, &c. where there is a conſtant ingreſs and egreſs of people, the apertures muſt be larger. The ſmalleſt breadth that can be given to a gate is eight and a half or nine feet, which is but juſt ſufficient for the paſſage of a coach.

Plate XLVI. fig. 1. is a ruſtic door, compoſed by the celebrated Vignola, in which the aperture occupies two-thirds of the whole height, and one-half of the whole breadth; the figure of it being a double ſquare. The ruſtics may be either ſmooth or hatched; their joints muſt form a rectangle, and the breadth of each joint may be one-third, or two-ſevenths, of the vertical ſurface of a ruſtic. The joints of the claveaux, or key-ſtones, muſt be drawn to the ſummit of an equilateral triangle, whoſe baſe is the top of the aperture. The architrave ſurrounding the aperture may be compoſed either of a large ogee and fillet, or of a platband and fillet. Its whole breadth muſt be one-tenth of the breadth of the aperture: the remaining part of each pier being for the ruſtics. The entablature is Tuſcan: the cornice is to be one-fifteenth of the whole height of the door; and what remains below it being divided into 21 equal parts, the two uppermoſt of them will be for the frize and architrave, and the remaining 19 for the ruſtics and plinth at the foot of the door.

Fig. 2. is a diſpoſition of Michael Angelo's. The windows of the Capitol at Rome are of this kind; and Sir Chriſtopher Wren has executed doors of the ſame kind

Principles. kind under the ſemicircular porches in the flanks of St Paul's. The figure of the aperture may be a double ſquare; the architrave one-ſixth of the breadth of the aperture; and the whole entablature one quarter of its height. The front of the pilaſters or columns, on each ſide, muſt be on a line with the faſcia of the architrave; and their breadth muſt be a ſemidiameter.

Fig. 3. is likewiſe a deſign of Vignola's. It is of the Corinthian order, and executed in the Cancellaria at Rome. The height is equal to double its breadth; and the whole ornament at the top is equal to one-third of the height of the aperture. The architrave is in breadth one-fifth of the breadth of the aperture; and the pilaſters, that ſupport the conſoles, are half as broad as the architrave. The whole is well imagined, but rather heavy; and it will be beſt to reduce the architrave to one-ſixth of the aperture, diminiſhing the entablature proportionally.

Fig. 4. is a deſign of Serlio's. The aperture may be either twice as high as broad, or a trifle leſs. The diameter of the columns may be equal to one quarter of the breadth of the aperture; and their height may be from eight diameters to eight and a half. The entablature muſt be ſomewhat leſs than one quarter of the height of the columns; and the height of the pediment may be one quarter of its baſe.

Fig. 5. is a door in the ſaloon of the Farneſe at Rome, deſigned by Vignola. The aperture forms a double ſquare. The entablature is equal to three-elevenths of its height, the architrave being one of theſe elevenths; and the whole ornaments on the ſides, conſiſting of the architrave and pilaſters, are equal to two-ſevenths of the breadth of the aperture: the cornice is Compoſite, enriched with mutules and dentils; and the friize is adorned with a feſtoon of laurel.

Fig. 6. is copied from a door at Florence, ſaid to be a deſign of Cigoli's. The height of the aperture is a trifle more than twice its breadth. It is arched; and the impoſt is equal to half a diameter. The columns are Ionic, ſomewhat above nine diameters high; and their ſhafts are garniſhed each with five ruſtic cinctures. The entablature is leſs than one quarter of the column; and the breadth of the tablet, in which there is an inſcription, is equal to the breadth of the aperture.

Plate LVI. fig. 1. is a pier invented by Mr Chambers. Its diameter may be one quarter of its height, excluſive of the plinth and vaſe; and the height of both theſe may be equal to one diameter of the pier, or a trifle leſs. The ruſtics may either be plain, hatched, or vermiculated: the height of each courſe may be one-eleventh part of the height of the pier, counting to the top of the entablature; the entablature two-elevenths; and the baſe of the pier one-eleventh part.

Fig. 2. is likewiſe a compoſition of Mr Chambers, imitated from M. Angelo Buonaroti's deſign for Cardinal Sermonetti. The height of the aperture is ſomewhat more than twice its breadth; which breadth occupies one-third of the breadth of the whole compoſition. The order is Compoſite; and the height of the entablature is equal to one quarter of the height of the column. He has made a break in it over each column: but, unleſs the column project conſiderably, it will be as well to carry the entablature on in a ſtraight line. The dimenſions of the particular parts may be meaſured on the deſign. Principles.

Fig. 3. is alſo a compoſition of Mr Chambers, executed at Goodwood, the ſeat of his grace the duke of Richmond, in Suſſex. The diameter is one quarter of the height, excluſive of the finiſhing, which is equal to one diameter; and the height of the pier, from the top of the entablature downwards, being divided into eleven and a half parts, one of theſe parts is given to the baſe, one to each ruſtic, and one and a half to the aſtragal, friize, and cornice.

Fig. 4. is a compoſition of the late earl of Burlington's, that great architect and patron of the fine arts, which is executed at Chiſwick, and at Bedford houſe in Bloomſbury ſquare, with ſome little difference.

Fig. 5. is an invention of Mr Chambers.

Fig. 6. is one of Inigo Jones's; of which kind he hath executed a couple at Aimſbury in Wiltſhire, the ſeat of his grace the duke of Queenſberry.

Chap. XIII. *Of Windows.*

78 Proportions of windows.

The firſt conſideration with regard to windows is their ſize, which varies according to the climate, the deſtination of the building, &c. In Britain, the windows of the ſmalleſt private houſes are commonly from 3 to $3\frac{1}{2}$ feet broad; and being generally twice their breadth in height, or ſomewhat more, in the principal apartments, they generally riſe to within a foot or two of the ceilings of the rooms, which are frequently no higher than 10 feet, and at moſt 12 or 13. But, in more conſiderable houſes, the apartments are from 15 to 20 feet high, and ſometimes more; and in theſe the windows are from 4 to 5 and $5\frac{1}{2}$ feet broad, and high in proportion. Theſe dimenſions are ſufficient for dwelling houſes of any ſize in this country; when they are larger, they admit too much of the cold air in winter. But churches, and other buildings of that kind, may have larger windows, proportioned to the ſize of the ſtructures.

The proportions of the apertures of windows depend upon their ſituation. Their breadth in all the ſtories muſt be the ſame; but the different heights of the apartments make it neceſſary to vary the height of the windows likewiſe. In the principal floor, it may be from $2\frac{1}{8}$ of the breadth to $2\frac{1}{4}$, according as the rooms have more or leſs elevation. In the ground ſtory, where the apartments are lower, the apertures of the windows ſeldom exceed a double ſquare, and, when they are in a ruſtic baſement, they are frequently made much lower. The height of the windows of the ſecond floor may be from $1\frac{1}{2}$ of their breadth to $1\frac{3}{4}$; and Attics and Mezzanines may be either a perfect ſquare, or ſomewhat lower.

79 How ornamented.

The windows of the principal floor are generally moſt enriched. The ſimpleſt method of adorning them is, with an architrave ſurrounding the aperture, and crowned with a friize and cornice. The windows of the ground floor are ſometimes left entirely plain, without any ornament: and at others they are ſurrounded with ruſtics, or a regular architrave with a friize and cornice. Thoſe of the ſecond floor have generally an architrave carried entirely round the aperture;

Principles. ture; and the ſame is the method of adorning Attic and Mezzanine windows; but the two laſt have ſeldom either frize or cornice; whereas the ſecond floor windows are often crowned with both.

The breaſts of all the windows on the ſame floor ſhould be on the ſame level, and raiſed above the floor from two feet nine inches to three feet ſix inches at the very moſt. When the walls are thick, the breaſts ſhould be reduced under the apertures, for the conveniency of looking out. In France, the windows are frequently carried quite down to the floor. When the building is ſurrounded with gardens, or other beautiful objects, this method renders the rooms exceeding pleaſant.

The interval between the apertures of windows depends in a great meaſure on their enrichments. The breadth of the aperture is the leaſt diſtance that can be between them; and twice that breadth ſhould be the largeſt in dwelling houſes; otherwiſe the rooms will not be ſufficiently lighted. The windows in all the ſtories of the ſame aſpect muſt be placed exactly above one another.

Plate XLVII. fig. 1. is a deſign of P. Leſcot, abbot of Clagny, executed in the old Louvre at Paris. The apertures may be a double ſquare, or a trifle more; the architrave from one-ſixth to one-ſeventh of the breadth of the aperture: the pilaſter is equal to that breadth, when the architrave is narrow; or leſs by one quarter, or one-fifth, when it is broad. The whole entablature ſhould not exceed one quarter of the height of the aperture, nor be much lower. The conſoles may be equal in length to half the breadth of the aperture at moſt, and to one-third of it at leaſt.

Fig. 2. is a deſign of Palladio's executed at the Chiericato in Vicenza: its proportions are not much different from the following. The plat-band that ſupports the window is equal to the breadth of the architrave.

Fig. 3. is likewiſe a deſign of Palladio's, executed by him in many of his buildings. The aperture is a double ſquare. The breadth of the architrave is one ſixth of the breadth of the aperture; and the frize and cornice together are double the height of the architrave. The breadth of the conſoles is two-thirds of the breadth of the architrave.

Fig. 4. is a deſign of Ludovico da Cigoli; and executed in the ground floor of the Ranuchini palace at Florence.

Fig. 5. is a deſign of Inigo Jones, executed at the Banqueting Houſe. The aperture may be a double ſquare; the architrave may be one-ſixth of its breadth; the whole entablature one quarter of its height; and the breadth of the conſoles two-thirds of the breadth of the architrave.

Fig. 6. is a deſign of M. Angelo Buonaroti, executed at the Farneſe.

Chap. XIV. *Of Niches and Statues.*

80 It has been cuſtomary, in all ages, to enrich different parts of buildings with repreſentations of the human body. Thus the ancients adorned their temples, baths, theatres, &c. with ſtatues of their deities, heroes, and legiſlators. The moderns ſtill preſerve the ſame cuſtom, placing in their churches, palaces, &c. ſtatues of illuſtrious perſons, and even groups compoſed of various figures, repreſenting occurrences collected from hiſtory, fables, &c. Sometimes theſe ſtatues or groups are detached, raiſed on pedeſtals, and placed contiguous to the walls of a building, or in the middle of a room, court, or public ſquare. But they are moſt frequently placed in cavities made in the walls, called *niches*. Of theſe there are two ſorts; the one formed like an arch in its elevation, and ſemicircular or ſemielliptical in its plan; the other is a parallelogram both in its plan and elevation. 81 Different kinds of niches;

The proportion of both theſe niches depends on the characters of the ſtatues, or the general form of the groups placed in them. The loweſt are at leaſt a double ſquare in height; and the higheſt never exceed 2½ of their breadth.

With regard to the manner of decorating them when they are alone in a compoſition, they are generally encloſed in a pannel, formed and proportioned like the aperture of a window, and adorned in the ſame manner. In this caſe the niche is carried quite down to the bottom; but on the ſides and at the top, a ſmall ſpace is left between the niche and the architrave of the pannel. And when niches are intermixed with windows, they may be adorned in the ſame manner with the windows, provided the ornaments be of the ſame figure and dimenſions with thoſe of the windows. 82 How decorated.

The ſize of the ſtatues depends on the dimenſions of the niches. They ſhould neither be ſo large as to have the appearance of being rammed into the niches, as in Santa Maria Majora at Rome; nor ſo narrow as to ſeem loſt in them, as in the Pantheon. The diſtance between the outline of the ſtatue and ſide of the niche ſhould never be leſs than one-third of a head, nor more than one half, whether the niche be ſquare or arched: and when it is ſquare, the diſtance from the top of the head to the ceiling of the niche ſhould not be greater than the diſtance on the ſides. Statues are generally raiſed on a plinth, the height of which may be from one third to one half of a head; and ſometimes, where the niches are large, the ſtatues may be raiſed on ſmall pedeſtals. 83 Statues.

The character of the ſtatue ſhould always correſpond with the character of the architecture with which it is ſurrounded. Thus, if the order be Doric, Hercules, Jupiter, Mars, Æſculapius, and all male ſtatues, repreſenting beings of a robuſt and grave nature, may be introduced; if Ionic, then Apollo, Bacchus, &c.; and if Corinthian, Venus, Flora, and others of a delicate nature, ſhould be employed.

Chap. XV. *Of Chimney-pieces.*

84 Among the ancients there are very few examples of chimney-pieces to be met with. Neither the Italians nor French have excelled in compoſitions of this kind. Britain, by being poſſeſſed of many able ſculptors at different times, has ſurpaſſed all other nations, both in taſte of deſign, and workmanſhip.

85 Proportions and ſituations. The ſize of the chimney muſt be regulated by the dimenſions of the room where it is placed. In the ſmalleſt apartments, the breadth of the aperture ſhould never be leſs than three feet, or three feet ſix inches.

Principles. In rooms, from 20 to 24 feet ſquare, or of equal ſuperficial dimenſions, it may be from 4 to 4½ feet broad; in thoſe of 24 to 27, from 4½ to 5; and in ſuch as exceed theſe dimenſions, the aperture may even be extended to 5½ or 6 feet.

The chimney ſhould always be ſituated ſo as to be immediately ſeen by thoſe who enter the room. The middle of the partition wall is the moſt proper place in halls, ſaloons, and other rooms of paſſage; but in drawing-rooms, dreſſing-rooms, and the like, the middle of the back wall is the beſt ſituation. In bedrooms, the chimney is always in the middle of one of the partition walls; and in cloſets and other very ſmall places, to ſave room, it is put in a corner. Wherever two chimneys are uſed in the ſame room, they ſhould be placed either directly facing each other, if in different walls, or at equal diſtances from the centre of the wall in which they both are.

The proportion of the apertures of chimney-pieces of a moderate ſize is generally a perfect ſquare; in ſmall ones, it is a trifle higher; and in large ones, a trifle lower. Their ornaments conſiſt in architraves, frizes, cornices, columns, pilaſters, termini, caryatides, conſoles, and all kinds of ornaments of ſculpture, repreſenting animals, vegetables, &c. likewiſe vaſes, chalices, trophies of arms, &c. In deſigning them, regard muſt be had to the nature of the place where they are to be employed. Such as are intended for halls, ſaloons, guard-rooms, galleries, and other large places, muſt be compoſed of large parts, few in number, of diſtinct and ſimple forms, and having a bold relief; but chimney-pieces for drawing-rooms, dreſſing-rooms, &c. may be of a more delicate and complicated nature.

Chimney-pieces are compoſed of wood, ſtone, or marble; the laſt of which ought to be preferred, as figures or profiles are beſt repreſented in a pure white.

Plate XLVIII. exhibits different deſigns for chimney-pieces by Palladio and Inigo Jones. Their proportion may be gathered from the deſigns, which are accurately executed.

Chap. XVI. *Of the Proportions of Rooms.*

86 The proportions of rooms depend in a great meaſure on their uſe and actual dimenſions; but, with regard to beauty, all figures, from a ſquare to a ſeſquilateral, may be employed for the plan.

The height of rooms depends on their figure. Flat-ceiled ones may be lower than thoſe that are coved. If their plan be a ſquare, their height ſhould not exceed five-ſixths of the ſide, nor be leſs than four-fifths; and when it is oblong, their height may be equal to their breadth. But coved rooms, if ſquare, muſt be as high as broad; and when oblong, they may have their height equal to their breadth, more one-fifth, one quarter, or even one-third of the difference between the length and breadth; and galleries ſhould at leaſt be in height one and one-third of their breadth, and at moſt one and a half, or one and three-fifths.

87 High rooms improper in Britain. The coldneſs of the Britiſh climate is a ſtrong objection to high rooms; ſo that it is not uncommon to ſee the moſt magnificent apartments not above 15, 16, or at moſt 18 feet high; though the extent of the rooms would require a much more conſiderable elevation. But where beauty is aimed at, this practice ought not to be imitated. Principles.

When rooms are adorned with an entire order, the entablature ſhould never exceed one-ſixth of the whole height in flat-ceiled rooms, and one-ſixth of the upright part in coved ones; and when there are neither columns nor pilaſters, but only an entablature, its height ſhould not be above one-ſeventh of theſe heights. If the rooms be finiſhed with a ſimple cornice, it ſhould never exceed one-fourteenth, nor ever be leſs than one-fifteenth part of the above-mentioned height.

Chap. XVII. *Of Ceilings.*

Ceilings are either flat, or coved in different manners. The ſimpleſt of the flat kind are thoſe adorned with large compartments, ſurrounded with one or ſeveral mouldings, either let into the ceiling, or projecting beyond its ſurface; and when the mouldings that form the compartments are enriched, and ſome of the compartments adorned with well executed ornaments, ſuch ceilings have a good effect, and are very proper for common dwelling houſes, and all low apartments. Their ornaments and mouldings do not require a bold relief; but, being near the eye, they muſt be finiſhed with taſte and neatneſs. For higher rooms, a flat ceiling which has the appearance of being compoſed of various joiſts framed into each other, and forming compartments of various geometrical figures, ſhould be employed. The ſides of the joiſts forming the compartments are generally adorned with mouldings, and repreſent either a ſimple architrave, or an architrave cornice, according to the ſize of the compartments and the height of the room. 88

Coved ceilings are more expenſive; but they are likewiſe more beautiful. They are uſed promiſcuouſly in large and ſmall rooms, and occupy from one-fifth to one-third of the height of the room. If the room be low in proportion to its breadth, the cove muſt likewiſe be low; and when it is high, the cove muſt be ſo likewiſe; by which means the exceſs of the height will be rendered leſs perceptible. But, where the architect is at liberty to proportion the height of the room to its ſuperficial dimenſions, the moſt eligible proportion for the cove is one-fourth of the whole height. In parallelogram-figured rooms, the middle of the ceiling is generally formed into a large flat pannel. This pannel, with the border that ſurrounds it, may occupy from one half to three-fifths of the breadth of the room. The figure of the cove is commonly either a quadrant of a circle or of an ellipſe, taking its riſe a little above the cornice, and finiſhing at the border round the great pannel in the centre. The border projects ſomewhat beyond the coves on the outſide; and, on the ſide towards the pannel, it is generally made of ſufficient depth to admit the ornaments of an architrave, or architrave and cornice.

In Britain circular rooms are not much in uſe; but they are very beautiful. Their height muſt be the ſame with that of ſquare rooms; their ceilings may be flat; but they are handſomer when coved, or of a concave form.

Arcs doublaux, or ſoffits of arch[illegible]n narrow, are

Principles. are ornamented with *guilloches*, or frets; but when broad, they may be adorned in a different manner.

When the profiles of the room are gilt, the ceilings ought likewife to be gilt. The uſual method is to gild all the ornaments, and to leave the grounds white, pearl colour, light blue, or of any other tint proper to ſet off the gilding to advantage. Painted ceilings, ſo common in France and Italy, are but little uſed in Britain.

Chap. XVII. *Of Stairs and Staircaſes.*

89 There are many kinds of ſtaircaſes: for, in ſome, the ſteps are made ſtraight; in others winding; in others, mixed of both. Of ſtraight ſtairs, ſome fly directly forward, others are ſquare, others triangular. Others are called *French flights*; or *winding ſtairs*, (which in general are called *ſpiral*, or *cockle ſtairs*); of which ſome are ſquare, ſome circular or round, and ſome elliptical or oval; and theſe again are various, ſome winding about a ſolid, others about an open newel. Stairs mixed of ſtraight and winding ſteps are alſo of various kinds; ſome are called *dog-legged*; ſome there are that wind about a ſolid newel, and others that fly about a ſquare open newel.

90 Staircaſes where to be placed. Great care ought to be taken in placing of the ſtaircaſe in any building; and therefore ſtaircaſes ought to be deſcribed and accounted for juſtly when the plan of a building is made. For want of this, ſometimes unpardonable errors have been committed: ſuch as having a little blind ſtaircaſe to a large houſe, or, on the other hand, a large ſpacious ſtaircaſe to a little one.

Palladio ſays, in placing ſtaircaſes, the utmoſt care ought to be taken; it being difficult to find a place convenient for them, that will not at the ſame time prejudice the reſt of the building. But commonly the ſtairs are placed in the angle, wing, or middle of the front.

To every ſtaircaſe are required three openings.

Firſt, The door leading thereto.

Secondly, The window, or windows, that give light to it;

And, Thirdly, The landing.

Firſt, The door leading to the ſtaircaſe ſhould be ſo placed, that moſt of the building may be ſeen before you come at the ſtairs, and in ſuch a manner that it may be eaſy for any perſon to find out.

Secondly, For the windows; if there be but one, it muſt be placed in the middle of the ſtaircaſe, that thereby the whole may be enlightened.

Thirdly, The landing of ſtairs ſhould be large and ſpacious for the convenient entering into rooms; in a word, ſtaircaſes ſhould be ſpacious, light, and eaſy in aſcent. The height of large ſteps muſt never be leſs than ſix inches, nor more than ſeven inches and a half.

The breadth of ſteps ſhould never be leſs than 10 inches, nor more than 18 inches; and the length of them not leſs than three feet, nor more than 12.

91 Plate XLIX. fig. 1. A ſtaircaſe of two flights.—*A* ſhows the manner of drawing the *ramp*, which is to riſe equal to the height of the firſt ſtep of the next flight, and as much as its *kneeling*; as is ſhown by the *ramp* interſecting the rail of the ſecond flight.

Fig. 2. ſhows the ſtraight rail interſecting a circular cap. Principles.

Fig. 3. ſection of two different hand rails.

Fig. 4. ſhows the manner of dove-tailing the riſer into the ſtep.

Plate L. fig. 1. repreſents a ſtaircaſe, with flights, and its landing rail. 92

Fig. 2. ſhows the ſolid part of the ſtep out of which the ſcroll is formed; where *a* repreſents the *overfail* of the ſtep; *b*, The thickneſs of the bracket, with its *mitring* to the *riſer*; and *c*, The *ſtring-board*.

Fig. 4. ſhows the ſcale for drawing the ſcroll of fig. 3.—To perform which, take the diſtance from 1 to the centre, in fig. 3. and ſet it from 1 to the centre in fig. 4; divide that extent into three parts, then ſet 4 ſuch parts on the upper ſide of the ſcale, and draw the line from 4 to 1; ſet one foot of your compaſſes at 4, and ſtrike the circular line; let that be divided into 12 equal parts, and then draw lines from 4 through thoſe diviſions to the upright line.

The ſcale being thus made, draw the ſcroll of fig. 3. by it in the following manner.

Set one foot of your compaſſes in 1, and deſcribe a ſtroke at *c*; take the ſame diſtance, and with one foot in 2, croſs the ſtroke at *c*; then from *c*, turn the part from 1 to 2, and proceed in the ſame manner: for if the diſtance were taken in the ſcale from 1 to the centre, it would ſtrike the circle too flat; and if taken from 2, it would ſtrike the circle too quick.

When this is well underſtood, there will be little difficulty in drawing the ſcroll below fig. 2.; which throws itſelf out farther in proportion than that in fig. 3.; for this will always be the caſe when the upper line of the ſcale, which conſiſts of four diviſions in fig. 4. is made but with three diviſions or leſs; whence it appears, that the upper line of the ſcale may be drawn at what length you pleaſe, according as you would bring in or keep out the ſcroll.

Plate LI. ſhows the manner of ſquaring twiſt rails. 93

Fig. 2. exhibits the pitch board, to ſhow what part of the ſtep the twiſted part of the rails contains; the three dotted lines drawn from the rail to the pitch board repreſent the width of the rail, which is to be kept level. The dotted lines *a* and *b* ſhow how much half the width of the rail turns up from its firſt beginning to 3.

Fig. 3. ſhows the ſame pitch board with the manner of the rail's turning up. If the ſides of the twiſted part of the rail be ſhaped by the rail mould, ſo that they direct down to its ground plan, that is, the upper ſide of the rail being firſt ſtruck by the mould, then apply the mould to the under ſide, as much back as the level of the pitch board ſhows, by being ſtruck on the ſide of the rail, and then fig. 3. being applied to the outſide of the rail, from its firſt twiſting part to 3, will ſhow how much wood is to be taken off.

Fig. 5. exhibits the ſquare of the rail, with the raking line of the pitch board drawn through the middle on the upper ſide; then draw the depth of the ſide of the rail parallel to this, and the dotted lines from the diagonal of the rail; theſe lines ſhow what quantity of wood will be wanting on the upper and lower ſides of the rail. Set your compaſſes at *c*, and draw the circular ſtroke from the raking part of the pitch board to *b*; take the diſtance *a b* and transfer it from

Practice. *a* to *b*, in fig. 7. The ſeveral diſtances thus found may be ſet at any number of places, ranging with the ſtraight part of the rail; and it then forms the width of the mould for the twiſting part of the rail.

Fig. 7. ſhows the ſweep of the rail. The rail cannot be fixed leſs than one-fourth part from the *noſing* or front of the ſtep.

The remaining part of the pitch board may be divided into any number of parts, as here into four; from theſe diviſions draw lines acroſs the pitch board to the raking line; then take the diſtances from the ground line of the pitch board to the plan of the rail, and ſet them perpendicular from the raking line of the pitch board; and theſe diviſions, when the rail is in its proper poſition, lie directly over the diviſions on the ground plan.

In this figure *l*, *m*, and *n*, riſe as much above *o* as the dotted line in fig. 5. does above the width of the rail: and they ſink as much below *o* as the other dotted line in fig. 5. falls below the width of the rail; the ſame thickneſſes muſt be glued upon *o*, though the greateſt part will come off in ſquaring. The reaſon of placing the letters *l*, *m*, and *n*, where they are, is that they might not obſtruct the ſmall diviſions of the rail mould.

Fig. 4. ſhows how to find the rail when it takes more than one ſtep. The remaining part of the pitch board is divided into four parts, as before in fig. 7. and it takes in two ſuch parts of the next ſtep. Draw lines from theſe diviſions to the diagonal of the pitch board as in fig. 7. then take the diſtance *a b*, and ſet it from *c* to *d*, and ſo proceed with the other diviſions.

Another way to find the outſide of the rail mould is, to draw all the diviſions acroſs the plan of the rail; then take the diſtance from the ground line of the pitch board to 4, transfer it from the diagonal of the pitch board to 4 on the rail; and ſo proceed with the other diſtances. Now, when the rail is put in its proper ſituation, *c* will be perpendicular to *b*, and all the diviſions, as 1, 2, 3, 4, &c. in the rail, will be perpendicular to 1, 2, 3, 4, &c. in the ground plan.

Fig. 6. ſhows the plan of a rail of five ſteps.

To find the rail.—Set five diviſions, as from *e* to *b*, which is the height of the five ſteps; draw the diagonal *b* to the plan of the tail; then take the diſtance *e f*, and transfer it to *g h*, and proceed in the ſame manner with the other ſeven diſtances. Practice.

To find the width of the rail mould.—Draw the lines acroſs the plan of the rail, as at *k*; ſet that diſtance from the diagonal to *i*; and ſo proceed with the reſt, as ſhown in fig. 4.

Having formed the ſides of the rail perpendicular to its ground plan, and having ſquared the lower end of the rail, then take a thin lath, and bend it with the rail, as is repreſented by *m*. fig. 1.

This is the readieſt method of ſquaring a ſolid rail; but if the rail be bent in the thickneſſes, the noſing of the ſteps muſt be drawn upon a cylinder, or ſome other ſolid body of a ſufficient width to contain the width of the rail or ſtring board.

r Repreſents the depth of the rail, touching the noſe of each ſtep. Take a ſufficient number of thickneſſes of this width, to make the thickneſs of your rail, glue them altogether upon your cylinder or templet; confine them till they are dry, and the rail taken off is ready ſquared. Proceed in the ſame manner with the architrave, marked *a*.

Chap. XIX. *Of Roofs.*

Plate LII. Fig. 1. ſhows the form of a truſſed roof, with three ring poſts, that may carry 70 feet or upwards. 94

Fig. 2. exhibits an *M* roof, capable of carrying as great an extent as the former. Indeed both theſe deſigns are capable of carrying almoſt any extent.

Fig. 3. repreſents two different ſorts of truſſes.

Fig 4. ſhows the manner of piecing timber. Sometimes the joint may be extended as far as *a*, with another bolt through it. To the right is ſhown a different ſort of joint.

Fig. 5. ſhows the manner of truſſing a girder. If the truſſes are full long, with the pieces *b* and *c*, you may make them as light as you pleaſe.

Fig. 6. repreſents the manner of truſſing partitions.

PART II. PRACTICE OF ARCHITECTURE.

HAVING thus deſcribed and given rules for the moſt generally received proportions of the different parts of buildings, both of the uſeful and ornamental kind, we muſt next give an account of the method of erecting different kinds of edifices; and here the judgement of the architect muſt neceſſarily be very much employed, as no fixed rules have been laid down by which he can be directed in all caſes. As a neceſſary preliminary, however, to the conſtruction, we muſt firſt conſider,

Chap. I. *The Situations of Houſes.*

Though it muſt be, in many caſes, impoſſible to chooſe ſuch a ſituation as might be agreeable either to the architect or the proprietor, yet where a choice can be made, there are certainly a great many circumſtances that will determine one ſituation to be preferable to another. Theſe circumſtances depend entirely on the perſon who is to inhabit the houſe. A farmer, for inſtance, ought to dwell in the moſt centrical part of his farm; an independent gentleman muſt regard the healthineſs, the neighbours with whom he can converſe, the proſpect from his houſe, and alſo the aſpect of the ground near it. To anſwer theſe purpoſes of health and pleaſure, an open elevated ſituation is the beſt, as the air is there pure, and the proſpect extenſive: but too elevated a ſituation is diſagreeable, as being both difficult of acceſs, and expoſed to cold and bleak winds. To build in bottoms between hills is both unhealthful and unpleaſant, the houſe being in a manner buried, and the ground near it generally marſhy from the

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the rain water which runs down from the hills, which renders the air unwholeſome. As a garden alſo is a very neceſſary article to a country habitation, the ſoil is by no means a matter of indifference; and therefore it may be concluded, that an elevated ſituation on a gravelly loam, near ſome running water, is the beſt ſituation for a country houſe.

Chap. II. *Of the Conſtruction of Edifices in general.*

The proper ſituation of a houſe, or any other building, being choſen, according to its intended nature, the next thing to be conſidered is to lay the foundation in a proper manner. The only ſecurity of a houſe or any other building whatever, is in having a good foundation, and no error is ſo dangerous as that which is committed here; as the ſhrinking of the foundation but the breadth of a ſtraw may cauſe a rent of five or ſix inches wide in the ſuperſtructure. To guard againſt errors of this kind, the qualities of the ground for a conſiderable depth muſt be carefully obſerved.

96 Qualities of the ground neceſſary to be examined.

The beſt foundation is that which conſiſts of gravel or ſtone; but, in order to know whether the inferior ſtrata are ſufficient for the ſupport of the building, it will be adviſable to ſink wells at ſome little diſtance. By attending to what is thrown up in digging theſe, the architect will be acquainted with what lies under the ſtony or gravelly bed which on the ſurface promiſes ſo much ſecurity, and will know what meaſures to take.

97 Rocky ground ſometimes dangerous.

But though a ſtony or gravelly bottom is undoubtedly the moſt ſure and firm, where all is ſound beneath, there is no kind of ground which may prove more fallacious, or occaſion ſuch terrible accidents. The reaſon of this is, that ſuch kind of ground often contains abſolute vacuities; nor is rock itſelf, though a foundation upon a rock is ſtrong even to a proverb, free from dangers of the ſame kind. Caverns are very frequent in rocky places: and ſhould a heavy building be erected over one of theſe, it might ſuddenly fall down altogether. To guard againſt accidents of this kind, Palladio adviſes the throwing down great weights forcibly on the ground, and obſerving whether it ſounds hollow, or ſhakes; and the beating of a drum upon it, by the ſound of which an accuſtomed ear will know whether the earth is hollow or not.

Where the foundation is gravel, it will be proper to examine the thickneſs of the ſtratum, and the qualities of thoſe that lie under it, as they have appeared in digging. If the bed of gravel is thick, and the under ſtrata of a ſound and firm kind, there needs no aſſiſtance; if otherwiſe, we muſt have recourſe to various methods in order to ſupply the defect.

98 Sandy or boggy ground how managed.

The other matters which may occur for a foundation are clay, ſand, common earth, or rotten boggy ground. Clay will often both raiſe and ſink a foundation; yet it has a ſolidity which, with proper management, is very uſeful. The marſhy, rotten, or boggy ground is of all others the worſt; yet even upon this great buildings may be raiſed with perfect ſafety, provided proper care be taken. In caſe of boggy earths, or unfirm ſand, piling is one of the moſt common methods of ſecuring a foundation; and, notwithſtanding the natural diſadvantage of the earth, piles, when properly executed, are one of the ſtrongeſt and moſt ſecure foundations.

In foundations near the edge of waters, we ſhould always be careful to bound to the [illegible] many terrible accidents have happened from [illegible] being undermined by rivers. The [illegible] be followed when the ground on [illegible] been dug or wrought before. It ought [illegible] truſted in the condition in which it is left: but we muſt dig through it into the ſolid and [illegible] ſome way into that, according to the [illegible] neſs of the intended edifice. The church of St Peter's [illegible] at Rome is an inſtance of the importance of this [illegible] obſervation. That church is in great part built upon the old circus of Nero; and the builders having neglected to dig through the old foundation, the ſtructure is conſequently ſo much the weaker. The walls were judged of ſtrength enough to bear two [illegible] upon the corners of the frontiſpiece; but the foundation was found too weak, when it was impoſſible to remedy the defect perfectly.

[illegible] at Rome.

Before the architect, however, begins to lay the foundation of the building, it will be proper to conſtruct ſuch drains as may be neceſſary for carrying off the rain, or other refuſe water that would otherwiſe be collected and lodged about the houſe. In making of drains for carrying off this water, it will be neceſſary to make large allowances for the different quantities that may be collected at different times. It muſt alſo be conſidered, that water of this kind is always loaded with a vaſt quantity of ſediment, which, by its continual falling to the bottom will be very apt to choke up the drain, eſpecially at thoſe places where there happen to be angles or corners in its courſe. The only method of preventing this is by means of certain cavities diſpoſed at proper diſtances from one another. In theſe the ſediment will be collected, and they are for that reaſon called *ſeſpools*. With regard to theſe, the only directions neceſſary are, that they be placed at proper diſtances, be ſufficiently large, and placed ſo as to be eaſily cleanſed. It is a good rule to make a ſeſpool at each place where the water enters the drain; as by this means a conſiderable quantity of ſediment will be prevented from entering the channel at all. Others are to be made at proper diſtances, eſpecially where there are any angles. They muſt be made ſufficiently large; the bigger, in moderation, the better; and they muſt alſo be covered in ſuch a manner as to be eaſily got at in order to be cleaned. But, as putrid water is exceedingly noxious, it will be neceſſary to carry up a brick funnel over every ſeſpool, in order to prevent the collection of the putrid effluvia, which would otherwiſe occaſion the death of the perſon who cleaned it.

101 Drains how made.

102 Seſpools.

All drains ought to be arched over at top, and may be moſt conveniently built of brick. According to their different ſizes, the following proportions of height and thickneſs may be obſerved. If the drain is 18 inches wide, the height of the walls may be one foot and their thickneſs nine inches; the bottom may be paved with brick, laid flatwiſe, and the arch turned four inches. If the drain is 22 inches wide, the ſide walls are then to be one foot three inches in height, and the reſt conſtructed as before. If it is 14 inches wide,

103 Proportions of drains.

Practice. wide, the height of the walls may be nine inches, and the ſweep of the arch four. A drain of a yard wide ſhould have the ſame height, and the arch turned over it ought to be nine inches thick. Upon the ſame principles and proportions may other drains of any ſize be conſtructed.

104 Foundation of buildings how laid. The ſewers and drains being conſtructed in a manner proportioned to the ſize of the intended building, the architect may next proceed to lay the foundation of the walls. Here the firſt care muſt be, that the floor of the foundation be perfectly ſmooth and level. The Italians begin with laying over it an even covering of ſtrong oak plank; and upon that they lay, with the moſt exact care, the firſt courſe of the materials. Whether we take this method, or begin upon the naked floor, all muſt be laid with the moſt exact truth by rule and line. When the board plat is laid, a courſe of ſtone is the beſt firſt bed, and this is to be laid without mortar; for lime would make the wood decay, which otherwiſe, in a tolerably good ſoil, will laſt for ages. After this, all the courſes ſhould follow with the ſame perfect evenneſs and regularity. If the materials are brick, they ſhould be laid on with an equal, and not too great quantity of mortar: if ſtone, they ought to be placed regularly, and in the ſame ſituation in which they lay in the quarry: for many ſtones which will bear any weight flatwiſe, and in their natural poſition, are of ſuch a grain, that they will ſplit otherwiſe. The joinings of the under courſe muſt be covered by the ſolid of the next courſe all the way up; and the utmoſt care muſt be taken that there be no vacuity left in the wall, for the weight will moſt certainly cruſh it in. The leſs mortar there is in a foundation, the better. Its uſe is to cement the bricks and ſtones together; and the evener they are, the leſs will be required for that purpoſe. Where mortar is uſed to fill up cavities, it becomes part of the wall; and not being of equal ſtrength with the ſolid materials, it takes from the firmneſs of the building. For the ſame reaſon nothing can be more abſurd than to fill up a foundation with looſe ſtones or bricks thrown in at random; and where this is done, the ruin of the building is inevitable. Where the foundation of a principal wall is laid upon piles, it will be neceſſary alſo to pile the foundations of the partitions, though not ſo ſtrongly.

105 Thickneſs and diminution of walls, &c. The thickneſs of foundation walls in general ought to be double that of the walls which they are to ſupport. The looſer the ground, the thicker the foundation wall ought to be; and it will require the ſame addition alſo in proportion of what is to be raiſed upon it. The plane of the ground muſt be perfectly level, that the weight may preſs equally everywhere: for when it inclines more to one ſide than another, the wall will ſplit. The foundations muſt diminiſh as they riſe, but the perpendicular is to be exactly kept in the upper and lower parts of the wall; and this caution ought to be obſerved all the way up with the ſame ſtrictneſs. In ſome ground, the foundation may be arched; which will ſave materials and labour, at the ſame time that the ſuperſtructure has an equal ſecurity. This practice is peculiarly ſerviceable where the foundation is piled.

As the foundation walls are to diminiſh in thickneſs, ſo are thoſe which are built upon them. This is neceſſary in order to ſave expence, but is not abſolutely Practice. ſo to ſtrengthen the wall; for this would be no leſs ſtrong though it was continued all the way to the top of an equal thickneſs, provided the perpendicular was exactly kept. In this the ancients were very expert; for we ſee, in the remains of their works, walls thus carried up to an exorbitant height. It is to be obſerved, however, that, beſides perfect truth in their perpendiculars, they never grudged iron-work, which contributed greatly to the ſtrength of their buildings. The thickneſs and diminution of walls is in a great meaſure arbitrary. In common houſes built of brick, the general diminution from the bottom to the top is one half the thickneſs at the bottom; the beginning is two bricks, then a brick and a half, and laſtly one brick, thickneſs. In larger edifices, the walls muſt be made proportionally thicker; but the diminution is preſerved much in the ſame manner. Where ſtones are uſed regard muſt be had to their nature, and the propriety of their figures for holding one another. Where the wall is to be compoſed of two materials, as ſtone and brick, the heavieſt ought always to be placed undermoſt.

106 Diminution of the thickneſs of walls.

107 Angles how fortified. There is one farther particular regarding the ſtrength of a plain wall, and that is, the fortifying its angles. This is beſt done with good ſtone on each ſide, which gives not only a great deal of ſtrength, but a great deal of beauty. Pilaſters properly applied are a great ſtrengthening to walls. Their beſt diſtance is about every 20 feet, and they ſhould riſe five or ſix inches from the naked of the wall. A much ſlighter wall of brick with this aſſiſtance, is ſtronger than a heavier and maſſier one built plain. In brick walls of every kind, it is alſo a great addition to their ſtrength to lay ſome chief courſes of a larger and harder matter; for theſe ſerve like ſinews to keep all the reſt firmly together, and are of great uſe where a wall happens to ſink more on one ſide than another.

108 Windows improper near the corners. As the openings in a wall are all weakenings, and as the corners require to be the ſtrongeſt parts, there ſhould never be a window very near a corner. Properly, there ſhould always be the breadth of the opening firm to the corner. In the moſt perfect way of forming the diminution of walls, the middle of the thinneſt part being directly over the middle of the thickeſt, the whole is of a pyramidal form; but where one ſide of the wall muſt be perpendicular and plain, it ought to be the inner, for the ſake of the floors and croſs walls. The diminiſhed ſide, in this caſe, may be covered with a faſcia or cornice, which will at once be a ſtrength and ornament.

109 Chimneys. Along with the conſtruction of walls, that of the chimneys muſt alſo be conſidered; for errors in the conſtruction of theſe, will render the moſt elegant building extremely diſagreeable. The common cauſes of ſmoking are either that the wind is too much let in above at the mouth of the ſhaft, or the ſmoke is ſtifled below; and ſometimes a higher building, or a great elevation of the ground behind, is the ſource of the miſchief; or laſtly, the room in which the chimney is may be ſo ſmall or cloſe, that there is not a ſufficient current of air to drive up the ſmoke. Almoſt all that can be done, while the walls are conſtructing, to prevent ſmoke, is, to make the chimney vent narrower at bottom than top: yet this muſt not be carried to an extreme;

Practice. extreme; becauſe the ſmoke will then linger in the upper part, and all the force of the draught will not be able to ſend it up. As for the methods of curing ſmoky chimneys in houſes already built, ſee the article CHIMNEY.

110 Roofs. After the walls are finiſhed, the roof is the next conſideration: but concerning it very little can be ſaid; only that its weight muſt be proportioned to the ſtrength of the walls. It muſt alſo be contrived ſo as to preſs equally upon the building; and the inner walls muſt bear their ſhare of the load as well as the outer ones. A roof ought neither to be too maſſy nor too light; as being neceſſary for keeping the walls together by its preſſure, which it is incapable of doing while too light; and if too heavy, it is in danger of throwing them down. Of theſe two extremes, however, the laſt is to be accounted the worſt.

111 Floors. With regard to the floors, they are moſt commonly made of wood; in which caſe, it will be neceſſary that it ſhould be well ſeaſoned by being kept a conſiderable time before it is uſed. The floors of the ſame ſtory ſhould be all perfectly on a level: not even a threſhold riſing above the reſt; and if in any part there is a room or cloſet whoſe floor is not perfectly level, it ought not to be left ſo, but raiſed to an equality with the reſt; what is wanting of the true floor being ſupplied by a falſe one.

In mean houſes, the floors may be made of clay, ox blood, and a moderate portion of ſharp ſand. Theſe three ingredients, beaten thoroughly together and well ſpread, make a firm good floor, and of a beautiful colour. In elegant houſes, the floors of this kind are made of plaſter of Paris, beaten and ſifted, and mixed with other ingredients. This may be coloured to any hue by the addition of proper ſubſtances; and, when well worked and laid, makes a very beautiful floor. Beſides theſe, halls, and ſome other ground rooms, are paved or floored with marble or ſtone; and this either plain or dotted, or of a variety of colours; but the univerſal practice of carpeting has, in a great meaſure ſet aſide the beſtowing any ornamental workmanſhip upon floors. In country buildings, alſo, floors are frequently made of bricks and tiles. Theſe, according to their ſhapes, may be laid in a variety of figures; and they are alſo capable of ſome variation in colour, according to the nature of the earth from which they were made. They may be laid at any time; but for thoſe of earth or plaſter, they are beſt made in the beginning of ſummer, for the ſake of their drying.

CHAP. III. *Of the diſtribution of the Apartments of Houſes, with other conveniences.*

As houſes are built only for the ſake of their inhabitants, the diſtribution of the apartments muſt of neceſſity be directed by the way of life in which the inhabitants are engaged. In the country, this is commonly farming; and here, beſides the houſe for the family, there is alſo neceſſary a barn for the reception of the produce of the ground, a ſtable for cattle, a cart-houſe for keeping the utenſils under cover, and ſheds for other uſes.—To accompliſh theſe purpoſes, let a piece of ground be taken of five times the extent of the front of the houſe, and encloſed in the leaſt expenſive manner. Back in the centre of this let the houſe be placed, and in the front of the ground the barn and the ſtable, with the adjoining ſheds. Theſe are to be ſet one on each ſide, to the extreme meaſure of the encloſed ground; they will thus fill up a part of the entrance, and will leave all about the houſe ſome encloſed ground by way of yard. From the barn to the ſtable may be extended a fence with a gate in the middle, and this gate ought to front the door of the houſe.

112 Plan of a farm houſe.

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This much being ſettled, the plan of the houſe and out buildings may be made as follows. The door may open into a plain brick paſſage, at the end of which may be carried up a ſmall ſtaircaſe. On one ſide of the paſſage may be a common kitchen; and on the other ſide a better or larger room, which will ſerve the family by way of parlour. Beyond this may ſtand on one ſide the pantry, and on the other the dairy room, the laſt being twice the ſize of the former. They are placed on the ſame ſide with the parlour, on account of the heat of the kitchen, which renders it improper to be near them. On the kitchen ſide, a brewhouſe may very conveniently be placed. More rooms may be added on the ground floor as occaſion requires; and the upper ſtory is to be divided into bedchambers for the family, with garrets over them for the ſervants.—A houſe of this kind is repreſented Plate LIII. fig. 1.; and one of a ſomewhat better kind, fig. 2. where a private gentleman who has a ſmall family may find conveniency.

113 Of an elegant country ſeat. On Plate LIV. is repreſented a gentleman's country-ſeat, built on a more elegant plan. Here the front may extend 65 feet in length, the depth in the centre being 40 feet, and in each of the wings 45. The offices may be diſpoſed in wings; the kitchen in the one, and the ſtables in the other; both of which, however, may correſpond in their front with the reſt of the building, which they ought alſo to do with one another. Theſe wings may have a projection of 13 feet from the dwelling houſe, to which they ought to be connected, not by ſtraight lines, but by curves as repreſented fig. 2.

The beſt proportion of theſe offices to a houſe extending 65 feet in front, is 35 feet. If they are ſmaller, the houſe will look gigantic; if larger, they will leſſen its aſpect. To a front of 35 feet, a depth of 48 is a very good proportion. There ought alſo to be a covered communication between the dwelling houſe and offices, which muſt not appear only to be a plain blank wall, but muſt be ornamented with gates, as in the figure. The arch by which the offices are joined to the dwelling houſe muſt be proportioned to the extent of the buildings; and there cannot be a better proportion than five feet within the angles of the buildings. By this means the wings, which have only a projection of 13 feet, will appear to have one of 18, and the light will be agreeably broken.

With regard to the internal diſtribution of a houſe of this kind, the under ſtory may be conveniently divided into three rooms. The hall, which is in the centre will occupy the whole of the projecting part, having a room on each ſide. The length of the hall muſt be 24 feet and its breadth 12: the rooms on each ſide of it muſt be 16 feet long, and 11 wide. Of theſe two front rooms, that on the right hand may be

Practice. conveniently made a waiting room for perſons of better rank, and that on the left hand a dreſſing room for the maſter of the houſe. Behind the hall may run a paſſage of four feet and a half, leading to the apartments in the hinder part of the houſe and the ſtaircaſe. Theſe may be diſpoſed as follows: Directly behind the hall and this paſſage the ſpace may be occupied by a ſaloon, whoſe length is 24 feet and its breadth 17. On the left hand of the paſſage, behind the hall, is to be placed the grand ſtaircaſe; and as it will not fill the whole depth, a pleaſant common parlour may terminate on that ſide of the houſe. On the other ſide, the paſſage is to lead to the door of the great dining parlour, which may occupy the whole ſpace.

114 Another. A plan of a houſe of the ſame kind, but ſomewhat different in the diſtribution, is repreſented below in the ſame place. The front here extends 68 feet, and the wings project 28 feet; their depth is 48, and their breadth 36. The hall may be 26 feet long and 17 broad. On the left hand of the hall may be a waiting room 16 feet long and 10 broad; behind which may be a handſome dining room. The paſſage into this waiting room ſhould be at the lower end of the hall; and it muſt have another opening into the room behind it. On the right hand of the hall is the place of the great ſtaircaſe, for which a breadth of 16 feet three inches is to be allowed. In the centre of the building, behind the hall, may be a drawing room 26 feet long and 16 broad; and behind the ſtaircaſe will be room for a common parlour of 16 feet ſquare. The paſſage of communication between the houſe and wings may be formed into colonnades in a cheap manner behind: a flight of ſteps, raiſed with a ſweep, occupying the centre of each, and leading up to a door, and the covering being no more than a ſhed ſupported by the plaineſt and cheapeſt columns.

The two wings now remain to be diſpoſed of. That on the right hand may contain the kitchen, and offices belonging to it, and the other the ſtables. The front of the right hand wing may be occupied by a kitchen entirely, which will then be 30 feet long and $16\frac{1}{2}$ wide; or it may be made ſmaller by ſetting off a ſmall room to the right. Twenty-two feet by 16 will then be a good bigneſs. The other room will then have the ſame depth of 16 feet, and the width to the front may be $7\frac{1}{2}$. Beyond the kitchen may ſtand the ſtaircaſe, for which $7\frac{1}{2}$ feet will be a proper allowance; and to the right of this may be a ſcullery 12 feet 10 inches deep from the back front by ſeven in breadth. To the left of the ſtair may be a ſervants hall 16 feet ſquare, and behind that a larder 12 feet 10 by 14 feet 6. In the centre of the other wing may be a double coach-houſe: for which there ſhould be allowed the whole breadth of the wing, with 10 feet 6 inches in the clear; and on each ſide of this may be the ſtables. The external decorations of the front and wings will be better underſtood from the figure than they can be by any deſcription.

115 Of the earl of Wemyſs's houſe. Plate LV. ſhows the plan and elevation of the houſe of the earl of Wemyſs at Newmills. The proportions of the rooms are marked in the plan; and the front, being decorated with columns of the Ionic order, will ſufficiently ſhow in what manner any of the five orders may be introduced with propriety and elegance. Practice.

Chap. IV. *Of Aquatic Buildings.*

1. Of Bridges.

These are conſtructed either of wood or ſtone; of 116
which the laſt are evidently the ſtrongeſt and moſt durable, and therefore, in all caſes, to be preferred where the expence of erecting them can be borne. The proper ſituation for them is eaſily known, and requires no explanation; the only thing to be obſerved is, to make them croſs the ſtream at right angles, for the ſake of boats that paſs through the arches with the current of the river; and to prevent the continual ſtriking of the ſtream againſt the piers, which in a long courſe may endanger their being damaged and deſtroyed in the end.

Bridges built for a communication of high roads, ought to be ſo ſtrong and ſubſtantial as to be proof againſt all accidents that may happen, to have a free entrance for carriages, afford an eaſy paſſage to the waters, and be properly adapted for navigation, if the river admits of it. Therefore the bridge ought to be at leaſt as long as the river is wide in the time of its greateſt flood: becauſe the ſtopping of the waters above may cauſe too great a fall, which may prove dangerous to the veſſels, and occaſion the under gravelling the foundation of the piers and abutments; or, by reducing the paſſage of the water too much in time of a great flood, it might break through the banks of the river, and overflow the adjacent country, which would cauſe very great damages; or if this ſhould not happen, the water might riſe above the arches, and endanger the bridge to be overſet, as has happened in many places.

When the length of the bridge is equal to the breadth of the river, which is commonly the caſe, the current is leſſened by the ſpace taken up by the piers; for which reaſon this thickneſs ſhould be no more than is neceſſary to ſupport the arches; and it depends, as well as that of the abutments, on the width of the arches, their thickneſs, and the height of the piers.

117 Proper form of arches. The form of the arch is commonly ſemicircular; but when they are of any great width, they are made elliptical, becauſe they would otherwiſe become too high. This has been done at the Pont Royal at Paris, where the middle arch is 75 feet, and its height would have been 37.5 feet, inſtead of which it is only 24 by being made elliptical.

Another advantage of much more importance ariſes from the oval figure, which is, that the quantity of maſonry of the arches is reduced in the ſame proportion as the radius of the arch is to its height. That is, if the radius is 36 feet, and the height of the arch 24, or three-fourths of the radius, the quantity of maſonry of the arches is likewiſe reduced to three-fourths; which muſt leſſen the expence of the bridge conſiderably. Notwithſtanding theſe advantages, however, the lateſt experiments have determined ſegments of circles to be preferable to curves of any other kind; and of theſe the ſemicircle is undoubtedly the beſt, as preſſing moſt perpendicularly on the piers.

When

Practice.

When the height of the piers is about six feet, and the arches are circular, experience has shown, says Mr Belidor, that it is sufficient to make the thickness of the piers the sixth part of the width of the arch, and two feet more; that is, the thickness of the piers of an arch of 30 feet, ought to be eight feet; those of an arch of 48 feet, to be 10.

118 Thickness of the piers.

When the arches are of a great width, the thickness of the piers may be reduced to the sixth part of that width; but the depression of the two feet is not done at once; that is, in an arch of above 48 feet, 3 inches are taken off for every 6 feet of increase of the width of the arch. For instance, the thickness of the piers supporting an arch of 72 feet wide, should be 14 feet, according to the preceding rule; but by taking off 3 inches for every 6 feet, above an arch of 48 wide, the thickness of the piers is reduced to 13 feet; consequently, by following the same rule, the thickness of the piers supporting an arch of 16 fathoms wide, will be 16 feet; all the others above that width are the sixth part of the width.

After this, Mr Belidor gives a rule for finding the thickness of the piers which support elliptic arches, and makes them stronger than the former; the abutments he makes one-sixth part more than the piers of the largest arch. But it is plain that these rules are insufficient, being merely guess-work, determined from some works that have been executed.

119 Of the arch-stones.

The thickness of the arch-stones is not to be determined by theory, nor do those authors who have written on the subject agree amongst themselves. Mr Gautier, an experienced engineer, in his works, makes the length of the arch-stones, of an arch 24 feet wide, two feet; of an arch 45, 60, 75, 90 wide, to be 3, 4, 5, 6, feet long respectively, when they are hard and durable, and something longer when they are of a soft nature: on the contrary, Mr Belidor says, they ought to be always one twenty-fourth part of the width of the arch, whether the stones be hard or soft; because, if they are soft, they weigh not so much.

But that the length of the arch-stones should be but a foot in an arch of 24 feet wide, 2, 3, 4, in arches of 48, 72, 96 feet, seems incredible; because the great weight of the arches would crush them to pieces, by the pressure against one another: and therefore Mr Gautier's rule appears preferable. As he made the length of the arch-stones to increase in a slower proportion, from 10 to 45 feet wide, than those above that width, we imagine that the latter will be sufficient for all widths, whether they are great or little; therefore we shall suppose the length of the arch-stones of 30 feet in width to be two feet, and to increase one foot in 15; that is, 3 feet in an arch of 45 feet; 4, 5, 6, in an arch of 60, 75, and 90 feet: and so the rest in the same proportion.

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Table containing the thickness of piers of bridges.

	6	9	12	15	18	21	24
20	4.574	4.918	5.165	5.[illegible]	5.492	5.610	[illegible]
25	5.430	5.913	6.216	6.455	6.645	6.801	[illegible]
30	6.386	6.816	7.225	7.[illegible]3	7.746	[illegible]	[illegible]
35	7.258	7.786	8.[illegible]	8.[illegible]2	8.[illegible]7	9.[illegible]	9.[illegible]3
40	8.464	8.691	9.148	9.523	9.835	1[illegible].101	1[illegible].[illegible]26
45	8.965	9.579	1[illegible].[illegible]7	1[illegible].489	10.837	11.136	11.[illegible]91
50	9.805	10.454	11.[illegible]67	11.435	11.817	12.146	12.434
55	10.640	11.245	11.882	12.364	13.019	13.149	13.218
60	11.400	12.110	12.718	13.281	13.723	13.[illegible]9	13.[illegible]14
65	12.265	13.025	13.648	14.185	14.654	15.082	15.433
70	13.114	13.869	14.517	15.049	15.573	16.011	16.[illegible]00
75	14.000	14.705	15.336	15.965	16.480	16.940	17.[illegible]54
80	14.747	15.[illegible]42	16.234	16.[illegible]42	17.[illegible]81	17.864	18.298
85	15.513	16.328	17.041	17.674	18.237	18.742	19.[illegible]78
90	16.373	17.201	17.929	18.578	19.157	19.679	20.[illegible]52
95	17.184	17.826	18.772	19.438	20.036	20.577	21.068
100	17.991	18.848	19.610	20.293	20.908	21.466	21.[illegible]6

120 Explanation of the table.

The first horizontal line expresses the height of the piers in feet, from six to 24 feet, each increasing by three; the first vertical column, the width of arches from 20 to 100 feet, for every five feet.

The other columns express the thickness of piers in feet and decimals, according to the respective height at the head of the column, and the width of the arch against it in the first column.

Thus, for example, let the width of the arch be 60 feet, and the height of the piers 12; then the number 12.718, under 12, and against 60, expresses the thickness of the piers, that is 12 feet and 8 6 inches: we must observe again, that the length of the key-stone is two feet in an arch of 30 feet wide; 3, 4, 5, 6, in an arch of 45, 60, 75, 90; that of 20 feet wide, one foot four inches; and the length of any other width is found by adding four inches for every five feet in width.

As this table contains the thicknesses of piers in respect to arches that are commonly used in practice, we imagined, that to carry it farther would be needless; because the difference between the thickness of the piers of any contiguous arches being but small, those between any two marked here, may be made equal to half the sum of the next below and above it: thus the thickness of the piers of an arch 52 or 53 feet wide is nearly equal to 10.222, half the sum of the thicknesses 9.085 and 10.64 of the arches 50 and 55 feet wide, when the height of the piers is six feet.

121 Form of piers.

Rectangular piers are seldom used but in bridges over small rivers. In all others they project the bridge by a triangular prism, which presents an edge to the stream, in order to divide the water more easily, and to prevent

Practice. prevent the ice from ſheltering there, as well as veſſels from running foul againſt them: that edge is terminated by the adjacent ſurfaces at right angles to each other at Weſtminſter bridge, and makes an acute angle at the Pont Royal of about 60 degres; but of late the French terminate this angle by two cylindric ſurfaces, whoſe baſes are arcs of 60 degrees, in all their new bridges.

122 Slope of the bridge on each ſide. When the banks of the rivers are pretty high, the bridge is made quite level above, and all the arches of an equal width; but where they are low, or for the ſake of navigation, a large arch is made in the middle of the ſtream, then the bridge is made higher in the middle than at the ends: in this caſe, the ſlope muſt be made eaſy and gradual on both ſides, ſo as to form above one continued curve line, otherwiſe it appears diſagreeable to the eye. Mr Belidor will have the deſcent of that ſlope to be one twenty-fourth part of the length; but this is undoubtedly too much, as one fiftieth part of the length is quite ſufficient for the deſcent.

123 Width, &c. The width commonly allowed to ſmall bridges is 30 feet: but in large ones near great towns, theſe 30 feet are allowed clear for horſes and carriages, beſides a banquette at each ſide for foot paſſengers of 6 to 9 feet each, raiſed about a foot above the common road; the parapet walls on each ſide are about 18 inches thick, and 4 feet high; they generally project the bridge with a cornice underneath: ſometimes balluſtrades of ſtone or iron are placed upon the parapet, as at Weſtminſter; but this is only practiſed where a bridge of a great length is made near the capital of a country.

The ends of bridges open from the middle of the two large arches with two wings, making an angle of 45 degrees with the reſt, in order to make their entrance more free and eaſy: theſe wings are ſupported by the ſame arches of the bridge next to them, being continued in the manner of an arch, of which one pier is much longer than the other.

How the work is to be carried on.

124 Methods of laying the foundation. As the laying the foundation of the piers is the moſt difficult part of the whole work, it is neceſſary we ſhould begin with an eaſy caſe, that is, when the depth of the water does not exceed 6 or 8 feet; and then proceed to thoſe which may happen in a greater depth of water.

125 By batardeaus. One of the abutments, with the adjacent piers, is encloſed by a dyke called *batardeau* by the French, of a ſufficient width for the work, and room for the workmen. This batardeau is made by driving a double row of piles, whoſe diſtance is equal to the depth of water, and the piles in each row are 3 feet from each other: they are faſtened together on the outſide by bonds of 6 by 4 inches: this being done, frames of about 9 feet wide are placed on the inſide to receive the boards which are to form the encloſure: the two uprights of theſe frames are two boards of an inch and a half thick, ſharpened below to be driven into the ground, and faſted together by double bonds, one below and the other above, each ſeparated by the thickneſs of the uprights; theſe bonds ſerve to ſlide the boards between: after theſe frames have been driven into the ground as hard as can be, then the boards themſelves are likewiſe driven in till they reach the firm ground underneath.

Between every two piles tie-beams are faſtened to the bonds of the piles, to faſten the inſide wall to the outſide one; theſe tie-beams are let into the bonds and bolted to the adjacent piles: this being done, the bottom is cleared from the looſe ſand and gravel, by a machine like thoſe uſed by ballaſt-heavers; and then well prepared clay is rammed into this coffer very tight and firm, to prevent the water from oozing through. Practice.

Sometimes theſe encloſures are made with piles only driven cloſe to each other; at others, the piles are notched or dove-tailed one into the other; but the moſt uſual method is to drive piles with grooves in them, 5 or 6 feet diſtant from each other, and boards are let down between them.

This being done, pumps and other engines are uſed to draw the water out of the encloſures, ſo as to be quite dry; then the foundation is dug, and the ſtones are laid with the uſual precautions, obſerving to keep ſome of the engines always ſtanding, in order to draw out the water that may ooze through the batardeau.

The foundation being cleared, and every thing ready to begin the work, a courſe of ſtones is laid; the outſide all round with the largeſt ſtretchers and headers that can be had, and the inſide filled with aſhlers well jointed, the whole laid in terraſs mortar: the facings are crampt together, and ſet in lead; and ſome cramps are alſo uſed to faſten the facings with the inſide. The ſame manner is to be obſerved throughout all the courſes to the height of low water mark; after which the facings alone are laid in terraſs mortar, and the inſide with the beſt of the common ſort. When the foundation is carried to the height of low water mark, or to the height where the arches begin, then the ſhaft or middle wall is to be carried up nearly to the height of the arches, and there left ſtanding till all the piers are finiſhed, in order that the maſonry may be ſufficiently dry and ſettled before the arches are begun.

126 Proper form of the baſe. As the piers end generally with an arch at each end, it is cuſtomary to lay the foundation in the ſame manner: which is not ſo well as to continue the baſe rectangular quite to the ends of the piers, and as high as low water mark; both becauſe the foundation becomes then ſo much broader, and alſo becauſe the water will not be able to get under it: for when the current ſets againſt a flat ſurface, it drives the ſand and mud againſt it ſo as to cover it entirely; whereas if a ſharp edge be preſented to the ſtream, it carries every thing away, and expoſes the foundation to the continual action of the water, which in courſe of time muſt deſtroy it.

After the intervals between the arches are filled up with ſtones laid in a regular manner without mortar, and the gravel is laid over them; two drains or gutters are to be made lengthwiſe over the bridge, one on each ſide next to the foot-path, about ſix feet wide and a foot deep; which being filled with ſmall pebble ſtones, ſerve to carry off the rain water that falls on the bridge, and to prevent its filtering through the joints of the arches, as often happens.

127 Method of building with coffers, as was practiſed at Weſtminſter bridge. The former method of laying the foundation by means of batardeaus is very expenſive, and often meets with great difficulties: for when the depth of water is 8 feet or more, it is ſcarcely poſſible to make the batardeaus ſo tight as to prevent the water from oozing through them; and in that caſe the number of engines required, as well as the hands to work them, becomes very

Practice. very extenſive; and if part of the batardeau ſhould break by ſome extraordinary wind or tide, the workmen would be expoſed to very great danger.

The next and beſt method therefore is to build with coffers, when it is practicable, ſuch as were uſed at Weſtminſter bridge. Here the height of water was 6 feet at a medium when loweſt, and the tide roſe about 10 feet at a medium alſo: ſo that the greateſt depth of water was about 16 feet. At the place where one of the piers of the middle or great arch was to be, the workmen began to drive piles of about 13 or 14 inches ſquare, and 34 feet long, ſhod with iron, ſo as to enter into the gravel with more eaſe, and hooped above to prevent their ſplitting in driving them: theſe piles were driven as deep as could be done, which was 13 or 14 feet below the ſurface of the bed of the river, and 7 feet diſtant from each other, parallel to the ſhort ends of the pier, and at about 30 feet diſtant from them: the number of theſe piles was 34, and their intent to prevent any veſſels or barges from approaching the work; and in order to hinder boats from paſſing between them, booms were placed ſo as to riſe and fall with the water.

This being done, the ballaſt-men began to dig the foundation under the water of about 6 feet deep, and 5 wider all round than the intended coffer was to be, with an eaſy ſlope to prevent the ground from falling in: in order to prevent the current from waſhing the ſand into the pit, ſhort grooved piles were driven before the two ends and part of the ſides, not above 4 feet higher than low water mark, and about 15 feet diſtant from the coffer: between theſe piles rows of boards were let into the grooves down to the bed of the river, and fixed there.

The bottom of the coffer was made of a ſtrong grate, conſiſting of two rows of large timbers, the one longways, and the other croſſways, bolted together with wooden trunnels ten feet wider than the intended foundation. The ſides of the coffer were made with fir timbers laid horizontally cloſe one over another, pinned with oaken trunnels, and framed together at the corners, excepting at the two ſaliant angles, where they were ſecured with proper irons, ſo that the one half might be looſened from the other if it ſhould be thought neceſſary; theſe ſides were lined on the inſide as well as on the outſide with three inch planks placed vertically; the thickneſs of thoſe ſides was 18 inches at the bottom, reduced to 15 above, and they were 16 feet high; beſides, knee timbers were bolted at the angles, in order to ſecure them in the ſtrongeſt manner. The ſides were faſtened to the bottom by 28 pieces of timber on the outſide, and 18 within, called *ſtraps*, about 8 inches broad, and 3 or 4 inches thick, reaching and lapping over the ends of the ſides: the lower part of theſe ſtraps had one ſide cut dove-tail faſhion, in order to fit the mortiſes made near the edge of the bottom to receive them, and were kept in their places by iron wedges; which being drawn out when the ſides were to be taken away, gave liberty to clear the ſtraps from the mortiſes.

Before the coffer was launched, the foundation was examined, in order to know whether it was level; for which purpoſe ſeveral gauges were made, each of which conſiſted of a ſtone of about 15 inches ſquare and three thick, with a wooden pole in the middle of about 18 feet long. The foundation being levelled and the coffer fixed directly over the place with cables faſtened to the adjacent piles, the maſons laid the firſt courſe of the ſtones for the foundation within it; which being finiſhed, a ſluice made in the ſide was opened near the time of low water; on which the coffer ſunk to the bottom; and if it did not ſet level, the ſluice was ſhut, and the water pumped out, ſo as to make it float till ſuch time as the foundation was levelled: then the maſons crampt the ſtones of the firſt courſe, and laid a ſecond; which being likewiſe crampt, a third courſe was laid: then the ſluice being opened again, proper care was taken that the coffer ſhould ſettle in its due place. The ſtone work being thus raiſed to within two feet of the common low water mark, about two hours before low water the ſluice was ſhut, and the water pumped out ſo far as that the maſons could lay the next courſe of ſtone, which they continued to do till the water was riſen ſo high as to make it unſafe to proceed any further: then they let off the work, and opened the ſluice to let in the water. Thus they continued to work night and day at low water till they had carried their work ſome feet higher than the low water mark: after this, the ſides of the coffer were looſened from the bottom, which made them float; and then were carried aſhore to be fixed to another bottom, in order to ſerve for the next pier. Part II.

It muſt be obſerved, that the coffer being no higher than 16 feet, which is equal to the greateſt depth of water, and the foundation being 6 feet under the bed of the river; the coffer was therefore 6 feet under water when the tide was in; but being loaded with three courſes of ſtones, and well ſecured with ropes faſtened to the piles, it could not move from its place. By making it no higher, much labour and expence were ſaved; yet it anſwered the intent fully as well as if it had been high enough to reach above the higheſt flood.

The pier being thus carried on above low water mark, the maſons finiſhed the reſt of it during the intervals of the tides in the uſual way; and after all the piers and abutments were finiſhed in a like manner, the arches were begun and completed as mentioned before: the whole bridge was built in about ſeven years, without any accidents happening either in the work or to the workmen, which is ſeldom the caſe in works of this nature.

128 Materials employed.

It may be obſerved, that all the piers were built with ſolid Portland ſtone, ſome of which weighed four tons. The arch ſtones were likewiſe of the ſame ſort: but the reſt of the maſonry was finiſhed with Kentiſh *rag-ſtones*; and the paths for foot paſſengers were paved with *Purbec*, which is the hardeſt ſtone to be had in England, excepting Plymouth marble.

129 This method ſometimes impracticable.

This method of building bridges is certainly the eaſieſt and cheapeſt that can be thought of, but cannot be uſed in many caſes; when the foundation is ſo bad as not to be depended upon without being piled, or the depth of water is very great, with a ſtrong current and no tide, it cannot then be practiſed. For if piles are to be uſed, it will be next to impoſſible to cut them off in the ſame level five or ſix feet below the bed of the river, notwithſtanding that ſaws have been invented for that purpoſe: becauſe if they are cut off ſeparately, it will be a hard matter to do it ſo nicely that the one ſhall not exceed the other in height; and if this is not done

Practice. done, the grating or bottom of the coffer will not be equally ſupported, whereby the foundation becomes precarious: neither can they be cut off altogether; for piles are to be driven as far as the bottom of the coffer extends, which at Weſtminſter bridge was 27 feet; the ſaw muſt have three feet play, which makes the total length of the ſaw 30 feet; now, if either the water is deeper than it is there, or the arches are wider, the ſaw muſt ſtill be longer, ſo that this method is impracticable in any ſuch caſes.

In a great depth of water that has a ſtrong current and no tide, the coffers muſt reach above the water, which makes them very expenſive, and unwieldy to manage, as well as very difficult to be ſecured in their places, and kept ſteady; ſo that there is no probability of uſing them in ſuch a caſe.

130 Ruſſian method. In ſome caſes, where there is a great depth of water, and the bed of the river is tolerably level, or where it can be made ſo by any contrivance, a very ſtrong frame of timber, about four times as large as the baſe of the piers may be let down with ſtones upon it round the edges to make it ſink: after fixing it level, piles muſt be driven about it to keep it in its place; and then the foundation may be laid in coffers as before, which are to be kept ſteady by means of ropes tied to the piles.

This method has frequently been uſed in Ruſſia; and though the bed of the river is not very ſolid, yet ſuch a grate, when once well ſettled with the weight of the pier upon it, will be as firm as if piles had been driven under the foundation; but to prevent the water from gulling under the foundation, and to ſecure it againſt all accidents, a row of dove-tail piles muſt be driven quite round the grating: this precaution being taken, the foundation will be as ſecure as any that can be made.

131 French method. The French engineers make uſe of another method in raiſing the foundations of maſonry under water; which is, to drive a row of piles round the intended place, nearer to, or farther from, each other, according as the water is more deep or ſhallow: theſe piles being ſtrongly bound together in ſeveral places with horizontal tie-beams, ſerve to ſupport a row of dove-tail piles driven within them: when this is done, and all well ſecured according to the nature of the ſituation and circumſtances, they dig the foundation by means of a machine with ſcoops, invented for that purpoſe, until they come to a ſolid bed of gravel or clay; or if the bed of the river is of a ſoft conſiſtence to a great depth, it is dug only to about ſix feet, and a grate of timber is laid upon it, which is well ſecured with piles driven into the oppoſite corners of each ſquare, not minding whether they exceed the upper ſurface of the grate much or little.

When the foundation is thus prepared, they make a kind of mortar called *beton*, which conſiſts of twelve parts of pouzzolano or Dutch terraſs, ſix of good ſand, nine of unſlaked lime, the beſt that can be had, thirteen of ſtone ſplinters not exceeding the bigneſs of an egg, and three parts of tile duſt, or cinders, or elſe ſcales of iron out of a forge: this being well worked together muſt be left ſtanding for about 24 hours, or till it becomes ſo hard as not to be ſeparated without a pick-axe.

This mortar being thus prepared, they throw into the coffer a bed of ruble ſtones, not very large, and ſpread them all over the bottom as nearly level as they Practice. can, they then ſink a box full of this hard mortar, broken into pieces, till it come within a little of the bottom; the box is ſo contrived as to be overſet or turned upſide down at any depth; which being done, the pieces of mortar ſoften, and ſo fill up the vacant ſpaces between the ſtones; by theſe means they ſink as much of it as will form a bed of about 12 inches deep all over; then they throw in another bed of ſtone, and continue alternately to throw one of mortar and one of ſtone till the work approaches near the ſurface of the water, when it is levelled, and then the reſt is finiſhed with ſtones in the uſual manner.

Mr Belidor ſays, in the ſecond part of his Hydraulics, vol. ii. p. 188, that Mr Millet de Montville having filled a coffer containing 27 cubic feet, with maſonry made of this mortar, and ſunk it into the ſea, it was there left ſtanding for two months, and when it was taken out again it was harder than ſtone itſelf.

132 Impoſſibility of building bridges in ſome caſes. We have hitherto mentioned ſuch ſituations only where the ground is of ſoft nature: but where it is rocky and uneven, all the former methods prove ineffectual; nor indeed has there yet been any one propoſed which can be always uſed upon ſuch occaſions, eſpecially in a great depth of water. When the water is not ſo deep but that the unevenneſs of the rock can be perceived by the eye, piles ſtrongly ſhod with iron may be raiſed and let fall down, by means of a machine, upon the higher parts, ſo as to break them off piece by piece, till the foundation is tolerably even, eſpecially when the rock is not very hard; which being done either this or any other way that can be thought of, a coffer is made without any bottom, which is let down and well ſecured, ſo as not to move from its place: to make it ſink, heavy ſtones ſhould be fixed on the outſide; then ſtrong mortar and ſtones muſt be thrown into it; and if the foundation is once brought to a level, large hewn ſtones may be let down ſo as to lie flat and even: by theſe means the work may be carried on quite up to the ſurface of the water. But when the water is ſo deep, or the rock ſo hard as not to be levelled, the foundation muſt be founded, ſo as to get nearly the riſings and fallings; then the lower part of the coffer muſt be cut nearly in the ſame manner, and the reſt finiſhed as before. It muſt however be obſerved, that we ſuppoſe a poſſibility of ſinking a coffer; but where this cannot be done, no method that we know of will anſwer.

133 Trajan's bridge over the Danube deſcribed. Among the aquatic buildings of the ancients none appears to have been more magnificent than Trajan's bridge. Dion Caſſius gives the following account of it: "Trajan built a bridge over the Danube, which in truth one cannot ſufficiently admire; for though all the works of Trajan are very magnificent, yet this far exceeds all the others: the piers were 20 in number, of ſquare ſtone: each of them 150 feet high above the foundation, 60 feet in breadth, and diſtant from one another 170 feet. Though the expence of this work muſt have been exceeding great, yet it becomes more extraordinary by the river's being very rapid, and its bottom of a ſoft nature: where the bridge was built, was the narroweſt part of the river thereabout, for in moſt others it is double or treble this breadth; and although on this account it became ſo much the deeper and the more rapid, yet no other place was ſo ſuitable for

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for this undertaking. The arches were afterwards broken down by Adrian; but the piers are ſtill remaining, which ſeem as it were to teſtify that there is nothing which human ingenuity is not able to effect." The whole length then of this bridge was 1590 yards; ſome authors add, that it was built in one ſummer, and that Apollodorus of Damaſcus was the architect, who left behind him a deſcription of this great work.

134 Wooden bridges.

Where ſtone bridges cannot be erected on account of the expence, very ſtrong and durable ones may be conſtructed of wood: in which caſe they ought to be ſo framed, as that all the parts may preſs upon one another, like the arch of a ſtone bridge; and thus, inſtead of being weakened by great weights paſſing over them, they will become the ſtronger. How this is to be accompliſhed, will be better underſtood from the figure at bottom of Plate LIV. which repreſents a wooden bridge conſtructed after this manner, than it can be by any deſcription.

2. Of Harbours.

135 Situation proper for harbours.

In theſe, the firſt thing to be conſidered is the ſituation; which may be ſome large creek or baſon of water, in or near the place where the harbour is intended to be made, or at the entrance of a large river, or near the ſea: for a harbour ſhould never be dug entirely out of dry land, unleſs upon ſome extraordinary occaſions, where it is impoſſible to do otherwiſe, and yet a harbour is abſolutely neceſſary. When a proper place is found, before it is fixed upon, it muſt be conſidered whether ſhips can lie there ſafe in ſtormy weather, eſpecially when thoſe winds blow which are moſt dangerous upon that coaſt; whether there be any hills, riſing ground, or high buildings, that will cover it; in theſe caſes, the ſituation is very proper: but if there be nothing already that will cover the ſhips, it muſt be obſerved whether any covering can be made at a moderate expence, otherwiſe it would be uſeleſs to build a harbour there.

The next thing to be conſidered is, whether there be a ſufficient depth of water for large ſhips to enter with ſafety, and lie there without touching the ground; and if not, whether the entrance and inſide might not be made deeper at a moderate expence: or, in caſe a ſufficient depth of water is not to be had for large ſhips, whether the harbour would not be uſeful for ſmall merchantmen; for ſuch a one is often of great advantage, when ſituated upon a coaſt much frequented by ſmall coaſting veſſels.

The form of the harbour muſt be determined in ſuch a manner, that the ſhips which come in when it is ſtormy weather may lie ſafe, and ſo as there may be ſufficient room for as many as paſs that way: the depths of water where the piers are to be built muſt be taken at every 10, 15, or 20 feet diſtance, and marked upon piles driven here and there, in order that the workmen may be directed in laying the foundation.

136 Materials.

This being done, it muſt be conſidered what kind of materials are to be uſed, whether ſtone, brick, or wood. When ſtones are to be had at a moderate price, they ought to be preferred, becauſe the work will be much ſtronger, more laſting, and need fewer repairs, than if made with any other materials: but when ſtones are ſcarce, and the expence becomes greater than what is allowed for building the harbour, the foundation may be made of ſtone as high as low water mark, and the reſt finiſhed with brick. If this manner of building ſhould ſtill be too expenſive, wood muſt be uſed; that is, piles are driven as cloſe as is thought neceſſary; which being faſtened together by croſs bars, and covered with ſtrong oaken planks, form a kind of coffer, which is filled with all kinds of ſtones, chalk, and ſhingles. Practice.

137 Manner of laying the foundation in different depths of water, and in various ſoils, requires particular methods to be followed. When the water is very deep, the French throw in a great quantity of ſtones at random, ſo as to form a much larger baſe than would be required upon dry land; this they continue to within 3 or 4 feet of the ſurface of the water, where they lay the ſtones in a regular manner, till the foundation is raiſed above the water: they then lay a great weight of ſtones upon it, and let it ſtand during the winter to ſettle; as likewiſe to ſee whether it is firm, and reſiſts the force of the waves and winds: after that, they finiſh the ſuperſtructure with large ſtones in the uſual manner.

138 A preferable one.

As this method requires a great quantity of ſtones, it can be practiſed only in places where ſtones are in plenty; and therefore the following one is much preferable. A coffer is made with dove-tail piles, of about 30 yards long, and as wide as the thickneſs of the foundation is to be; then the ground is dug and levelled, and the wall is built with the beſt mortar.

As ſoon as the mortar is tolerably dry, thoſe piles at the end of the wall are drawn out, the ſide rows are continued to about 30 yards farther, and the end cloſed; then the foundation is cleared, and the ſtones laid as before. But it muſt be obſerved, that the end of the foundation finiſhed is left rough, in order that the part next to it may incorporate with it in a proper manner; but if it is not very dry, it will incline that way of itſelf, and bind with the mortar that is thrown in next to it: this method is continued till the whole pier is entirely finiſhed.

It muſt likewiſe be obſerved, that the piers are not made of one continued ſolid wall; becauſe in deep water it would be too expenſive: for which reaſon, two walls are built parallel to each other, and the interval between them is filled up with ſhingle, chalk, and ſtone. As theſe walls are in danger of being thruſt out or overſet by the corps in the middle, together with the great weight laid at times on the pier, they are tied or bound together by croſs walls at every 30 or 40 yards diſtance, by which they ſupport each other in a firm and ſtrong manner.

In a country where there is great plenty of ſtones, piles may be driven in as deep as they will go, at about two or three feet diſtance; and when the foundation is ſunk and levelled, large ſtones may be let down, which will bed themſelves: but care muſt be taken to lay them cloſe, and ſo as to have no two joints over each other; and when the wall is come within reach, the ſtones muſt be crampt together.

139 Another method with coffers.

Another method practiſed is to build in coffers much after the ſame manner as has been done in building the piers of Weſtminſter bridge; but as in this caſe the ends of the coffers are left in the wall, and prevent their

joining

Practice. joining ſo well as to be water tight, the water that penetrates through and enters into the corps may occaſion the wall to burſt and to tumble down. Another inconveniency ariſing from this manner of building is, that as there are but few places without worms, which will deſtroy wood wherever they can find it; by their means the water is let into the pier, and conſequently makes the work liable to the ſame accident as has been mentioned above.

140 Ruſſian method. To prevent theſe inconveinencies, the beſt method is to take the wood away, and joggle the ends of the walls together with large ſtones, pouring terraſs mortar into the joints; when this is done, the water between the two walls may be pumped out, and the void ſpace filled up with ſtone and ſhingle as uſual; or if theſe joggles cannot be made water tight, ſome dove-tail piles muſt be driven at each end as cloſe to the wall as can be done, and a ſtrong ſail cloth put on the outſide of them, which, when the water is pumped out, will ſtick ſo cloſe to the piles and wall, that no water can come in. This method is commonly uſed in Ruſſia.

141 Thickneſs of piers. The thickneſs of a pier depends on two conſiderations: it ought to be both ſuch as may be able to reſiſt the ſhock of the waves in ſtormy weather; and alſo to be of a ſufficient breadth above, that ſhips may be laden or unladen whenever it is thought neceſſary. Now, becauſe the ſpecific gravity of ſea water is about one half that of brick, and as 2 to 5 in compariſon of ſtone; and ſince the preſſure of ſtagnated water againſt any ſurface is equal to the weight of a priſm of water whoſe altitude is the length of that ſurface, and whoſe baſe is a right-angled iſoſceles triangle, each of the equal ſides being equal to the depth of the water; therefore a pier built with bricks, whoſe thickneſs is equal to the depth of the water, will weigh about four times as much as the preſſure of the water againſt it; and one of ſtone of the ſame breadth, about ſix times and a quarter as much. Now this is not the force to be conſidered, ſince this preſſure is the ſame within as without the pier: but it is that force with which the waves ſtrike againſt the piers, and that depends on the weight and velocity of the waves, which can hardly be determined; becauſe they vary according to the different depths of water, the diſtance from the ſhore, and according to the tides, winds, and other cauſes. Conſequently the proper thickneſs of the piers cannot be determined by any other means than by experience. Practice.

Practitioners ſuppoſe, that if the thickneſs of a pier is equal to the depth of the water, it is ſufficient; but for a greater ſecurity they allow 2, 3, or 4 feet more. This might probably do, if piers were built with ſolid ſtones crampt together; but as this is hardly ever the caſe, and on the contrary, as the inſide is filled up with ſhingle, chalk, or other looſe materials, their rule is not to be depended upon; beſides it makes the ſpace above too narrow for lading and unlading the ſhips, unleſs in a great depth of water; ſo that it does not appear that their method can be followed, excepting in a very few caſes where the water has but very little motion.

When ſtone can be had, no other materials ſhould be uſed, becauſe they being of a larger bulk than brick, will better reſiſt the waves by their own weight, till ſuch time as the mortar is grown hard; for after this is effected, brick will reſiſt better againſt the action of ſea water than ſoft ſtones.

The wall muſt be built with terraſs mortar from the bottom to the height of low water mark, and the reſt finiſhed with cinder or tile-duſt mortar, which has been found ſufficiently good in thoſe places where the wall is wet and dry alternately. The upper part of the pier ſhould be paved with flat hewn ſtones laid in ſtrong mortar, in order to prevent any water from penetrating into it: iron rings ought alſo to be fixed here and there at proper diſtances, to faſten the ſhips, and prevent them from ſtriking againſt the pier when agitated by the waves.

Wooden fenders or piles ſhould be driven at the inſide cloſe to the wall, and crampt to it with iron, to prevent the ſhips from touching them, and from being worn by the continual motion. Where the ſea breaks againſt the piers with great violence, breakers ſhould be made a proper diſtances; that is, two rows of piles are driven nearly at right angles to the piers for the length of about 12 or 15 feet, and at about 8 or 10 feet diſtant from each other; and then another to join the two former: the piles being covered with planks, and the inſide being filled with ſhingles and ruble ſtones, then the top is paved with ſtones of about a foot in length, ſet longwiſe to prevent the waves from tearing them up. This precaution is abſolutely neceſſary where the water ruſhes in very ſtrongly.

ARC

ARC

Architecture Architriclinus. *Military* ARCHITECTURE, the ſame with what is otherwiſe called *fortification*. See FORTIFICATION.

Naval ARCHITECTURE, the art of building ſhips. See *SHIP-Building*.

ARCHITRAVE, in *Architecture*, that part of a column which lies immediately upon the capital, being the loweſt member of the entablature. See Plate XXXIX.

Over a chimney, this member is called the *mantle-piece*; and over doors or windows, the *hyperthyron*.

ARCHITRICLINUS, in antiquity, the maſter or director of a feaſt, charged with the order and economy of it, the covering and uncovering of the tables, the command of the ſervants, and the like. Archivault

The architriclinus was ſometimes called *ſervus triclinarcha*, and by the Greeks προγευσης, i. e. *præguſtator*, or *foretaſter*. Potter alſo takes the architriclinus for the ſame with the ſympoſiarcha.

ARCHIVAULT, in *Architecture*, implies the inner contour of an arch, or a band adorned with mouldings, running over the faces of the arch-ſtones, and bearing upon the impoſts. It has only a ſingle face in the Tuſcan order, two faces crowned in the Doric and Ionic, and the ſame mouldings as the architrave in the Corinthian and Compoſite.

ARCHIVE,

Fig. 1.
The first sort of Huts.

Fig. 2.
The second sort of Huts.

Fig. 3. The third sort of Huts which gave rise to the Doric Order.

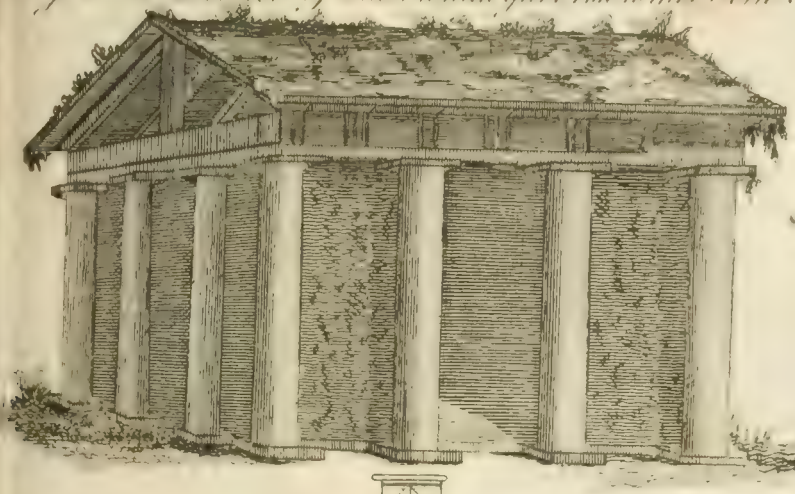
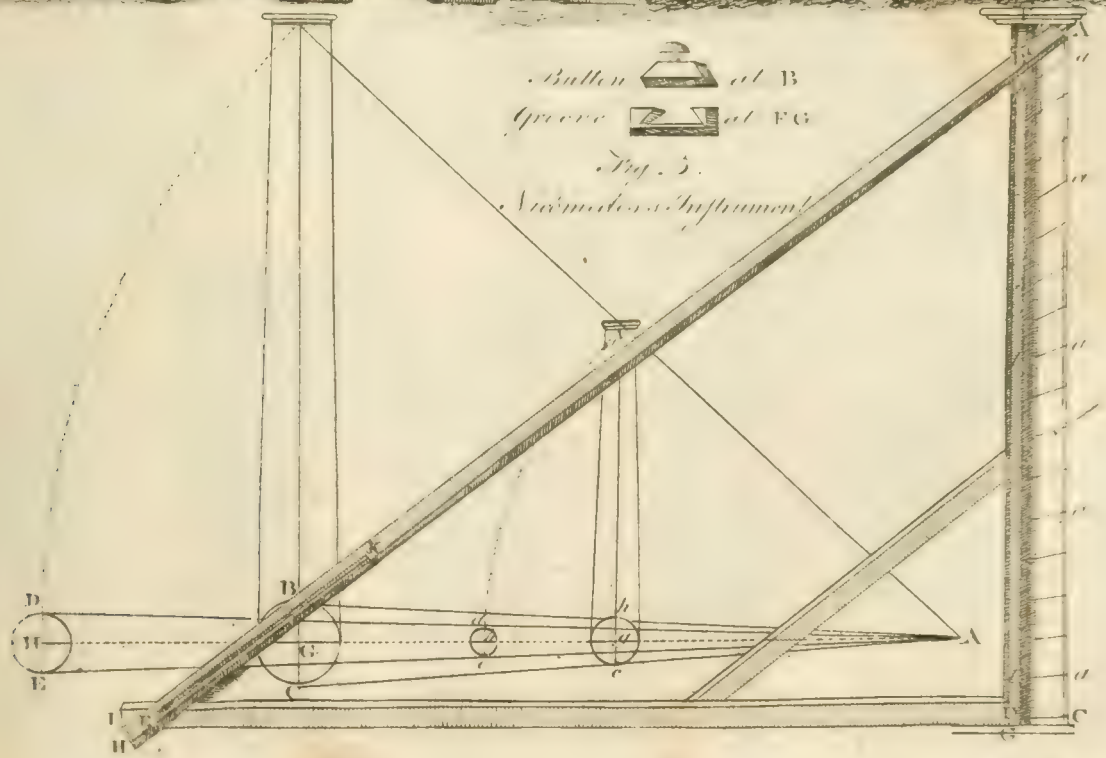


Fig. 4.
Capital of the Corinthian Order.

Ball at B

Groove at FG

Fig. 5.
Mechanical Instrument.



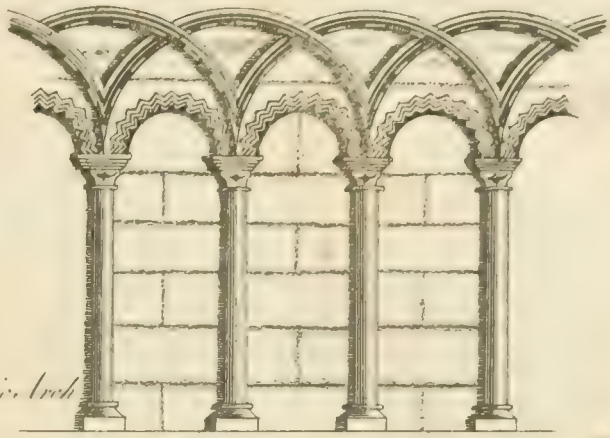
A. Bell Pen. Mat. Sculpt. fecit

Saxon Capitals.

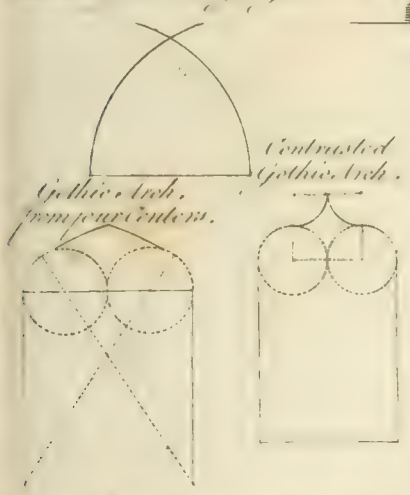
Saxon Arches.

Saxon Arch.

Saxon Arch.



Method of describing a Gothic Arch

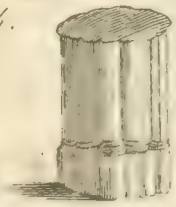


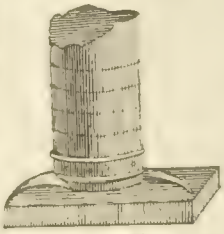
Gothic Arch from four Centers.

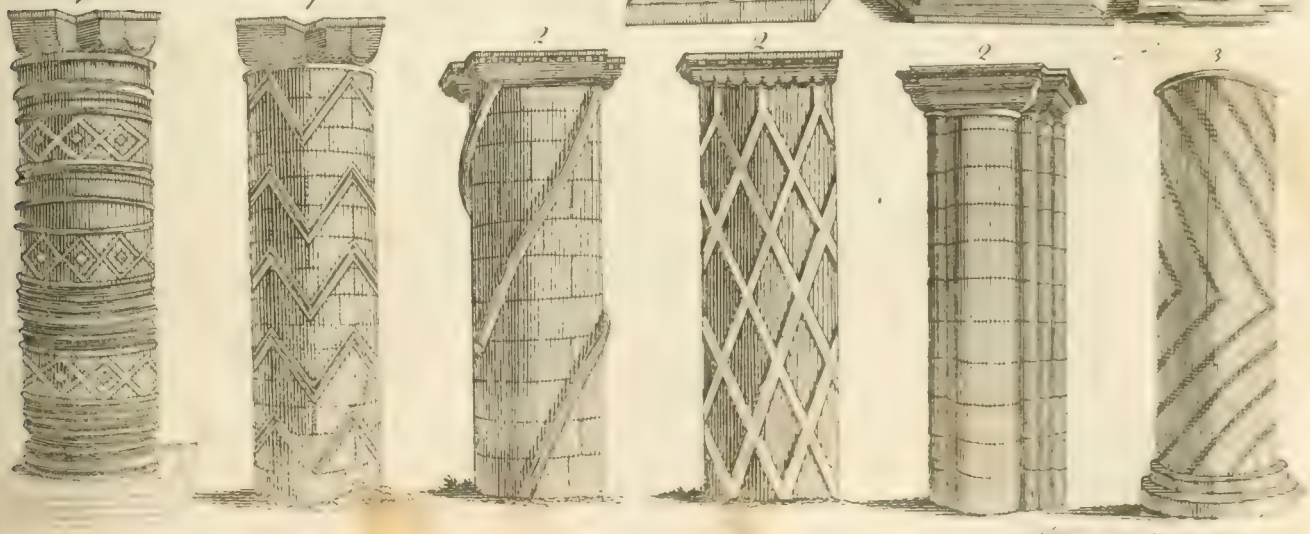
Contracted Gothic Arch.

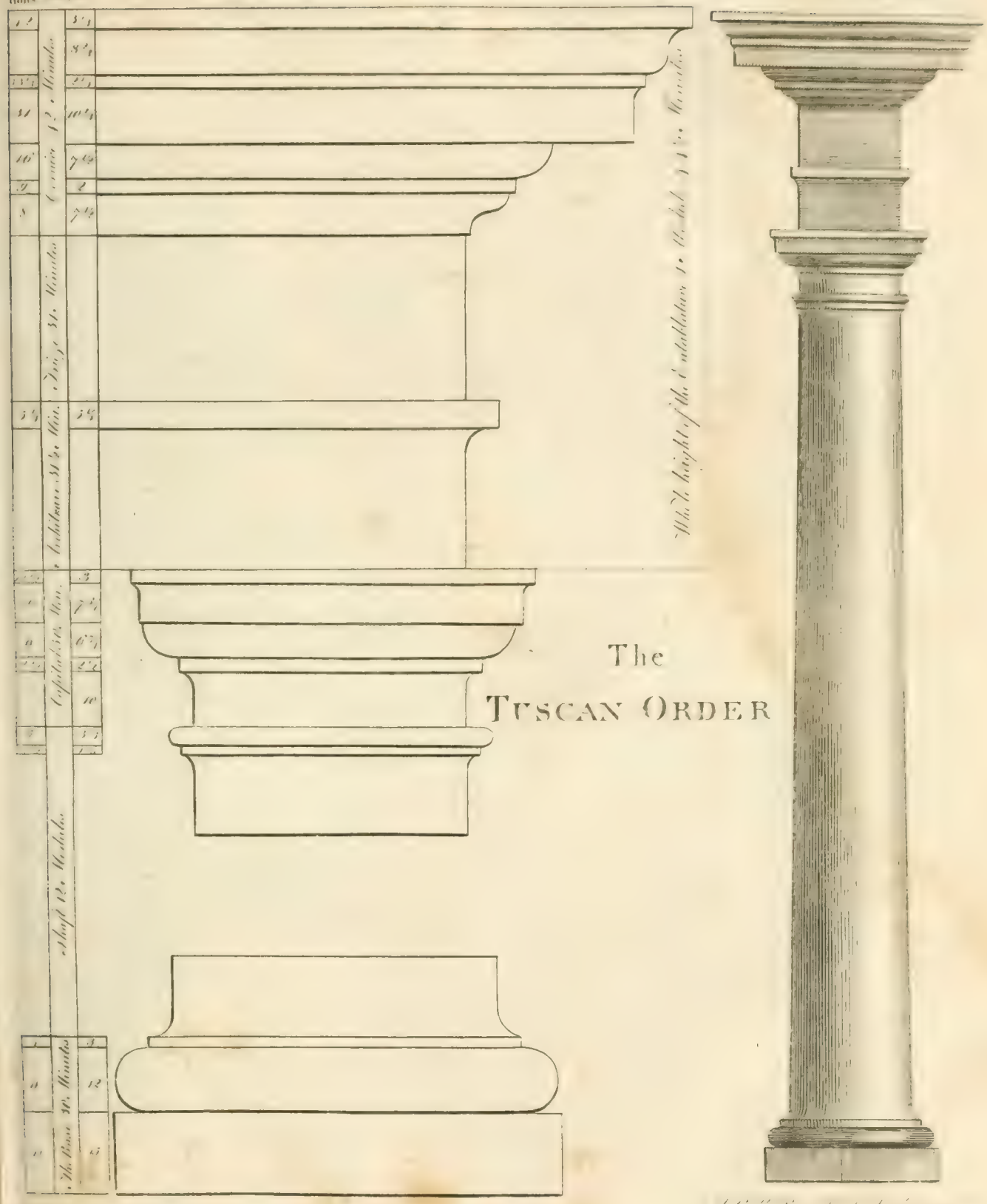
Common Gothic Arch.

Gothic Column.

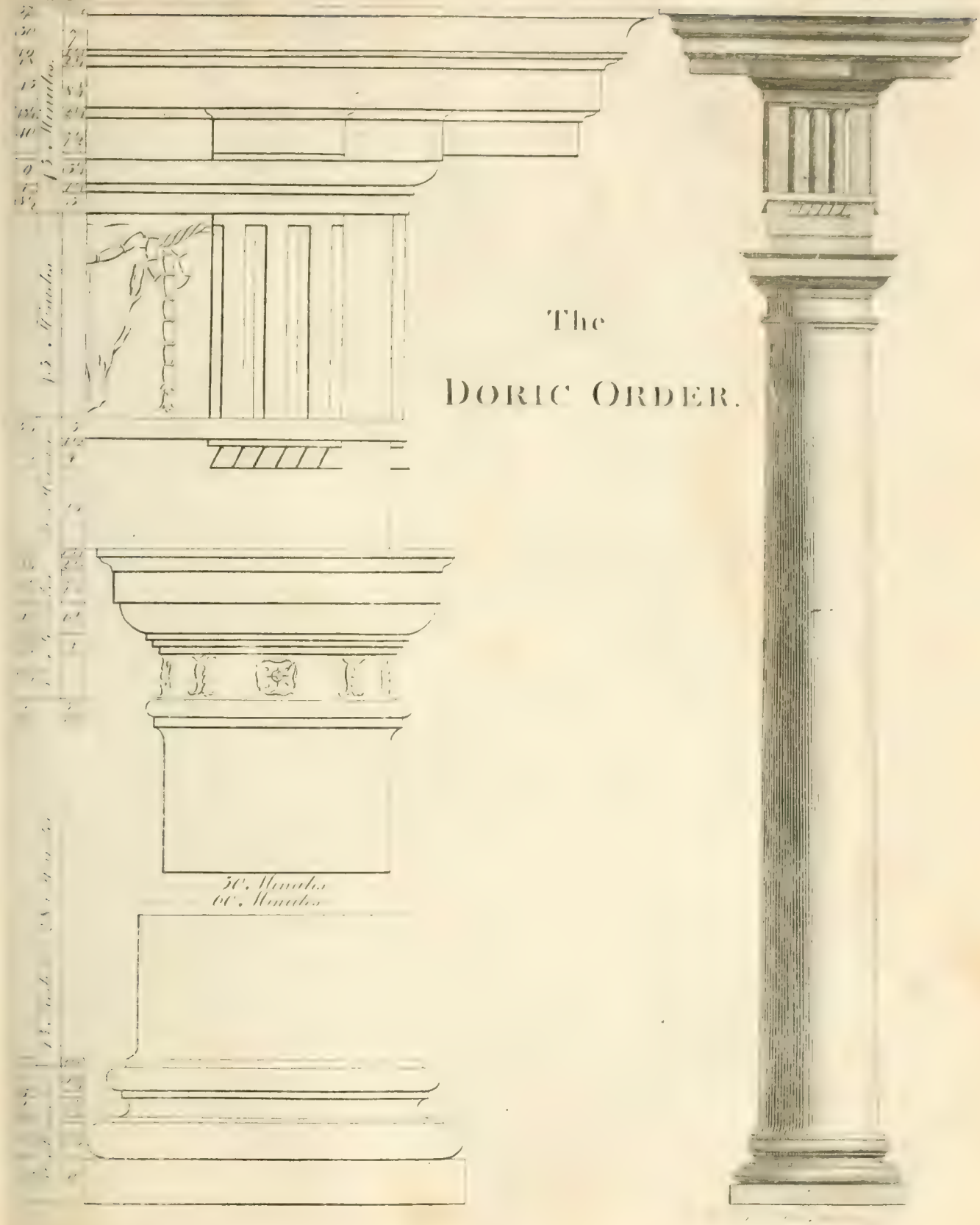








The TUSCAN ORDER



The DORIC ORDER.

The IONIC ORDER.

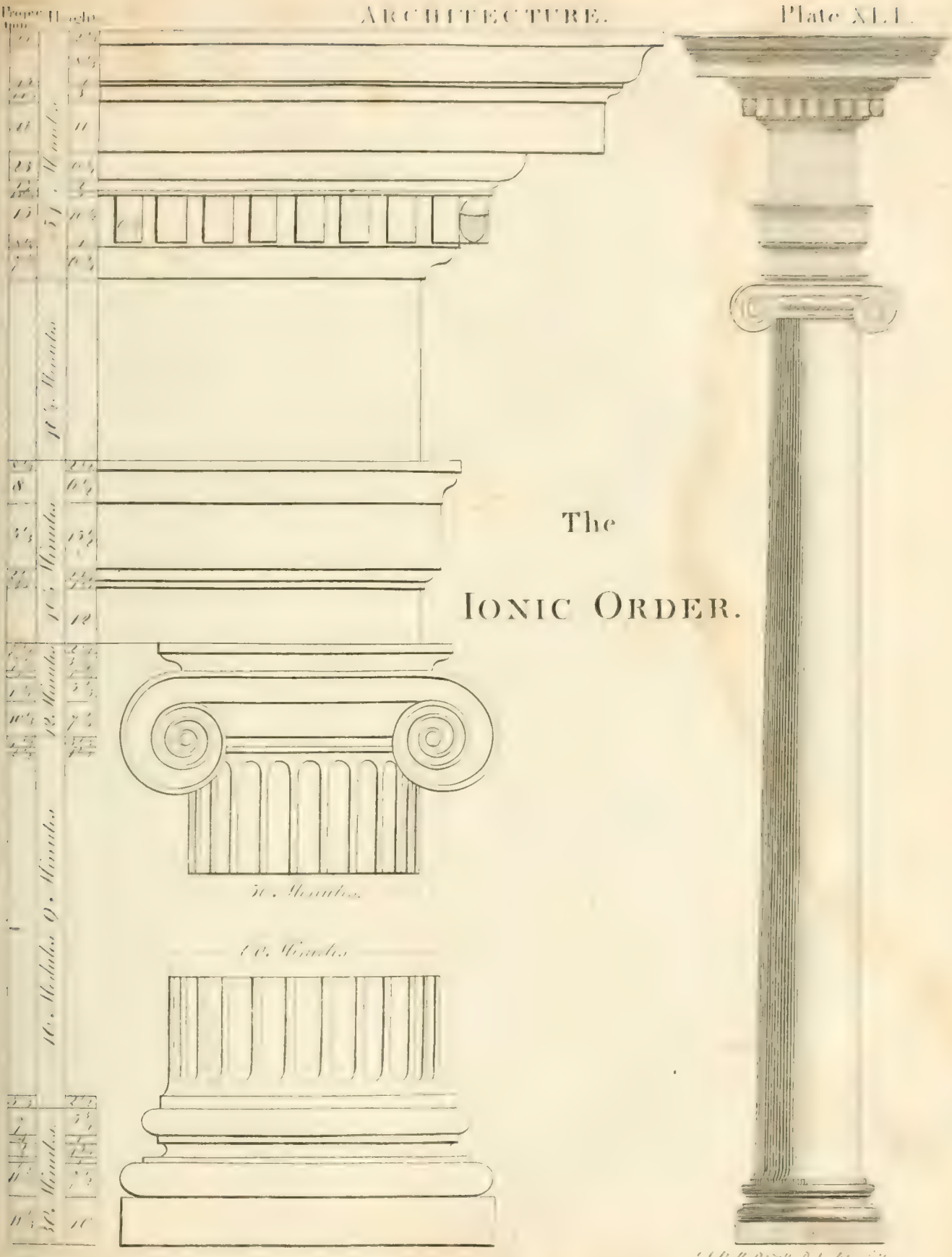


Fig. 1.
Fillet. List

Fig. 2.
Astragal

Fig. 3.
Scotia

Fig. 4.
Ovolo

Fig. 5.
Cyma Recta

Fig. 6.
Cyma Reversa

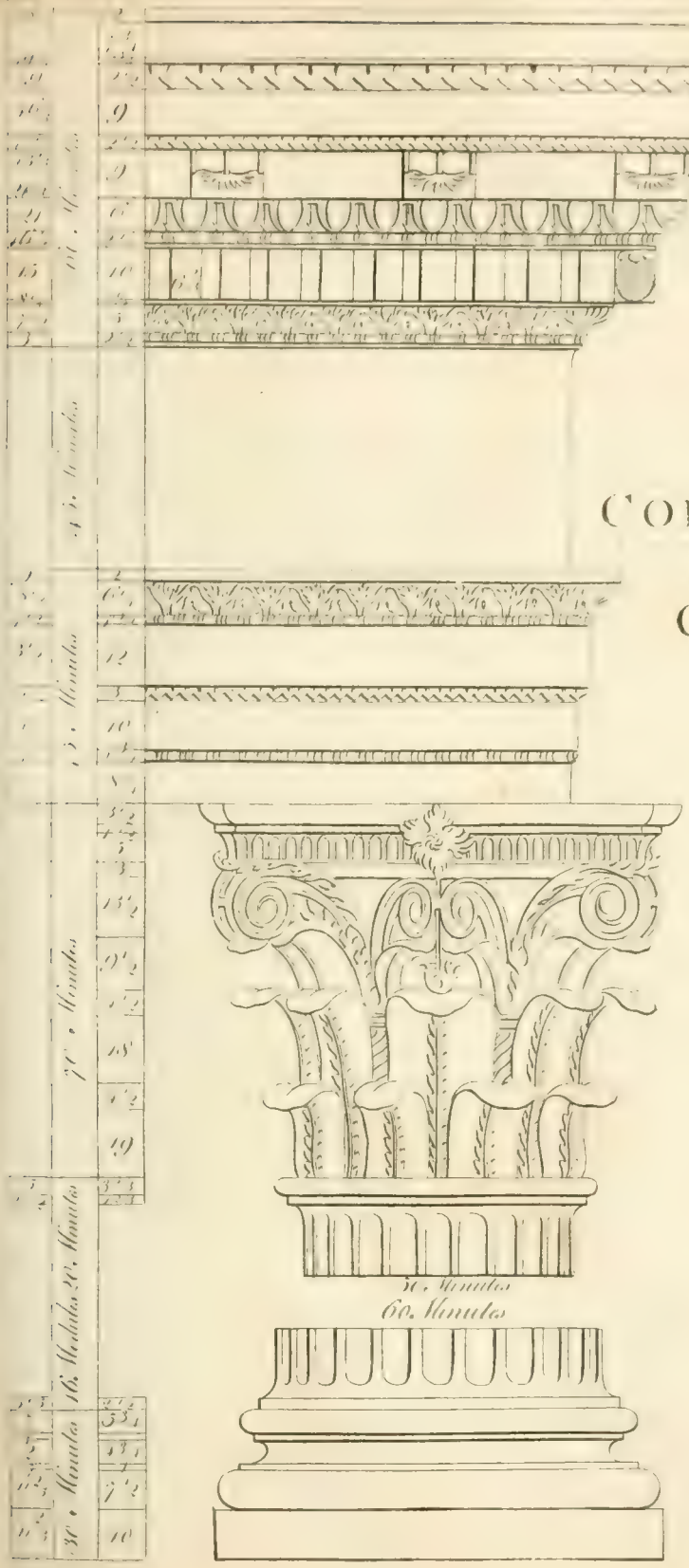
Fig. 7.
Cavetto

Fig. 9.
VOLUTE

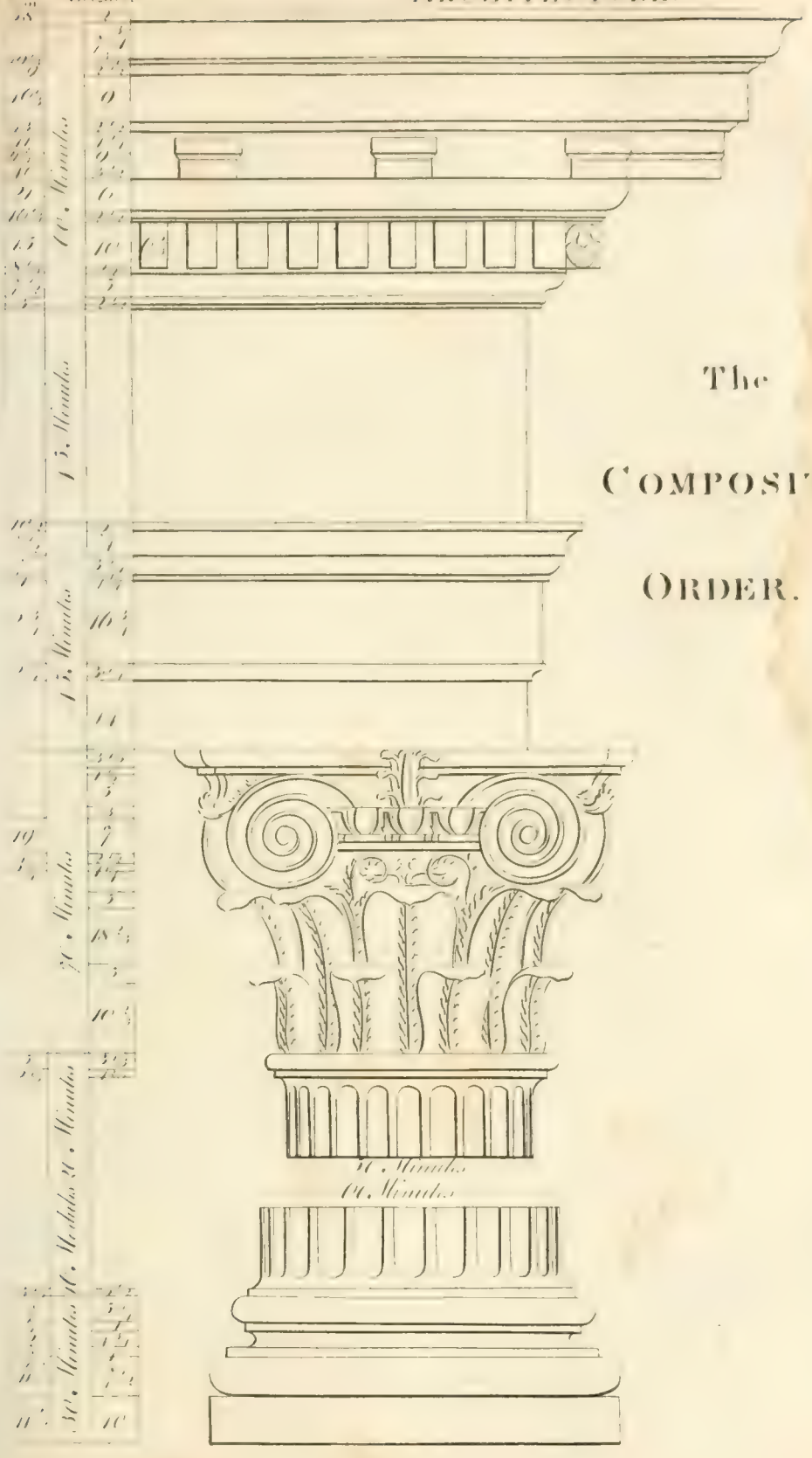
Fig. 10.

Hall. Sc.

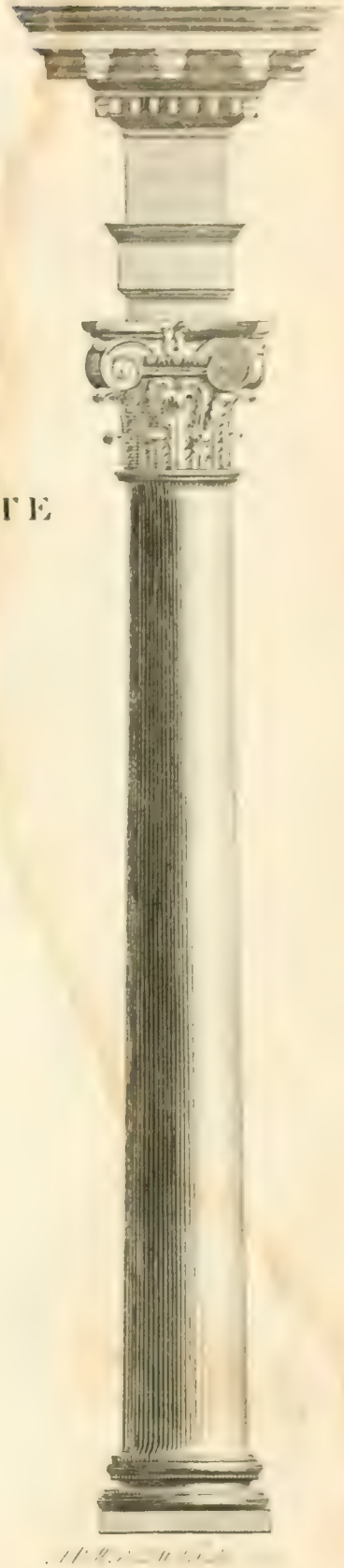
The CORINTHIAN ORDER

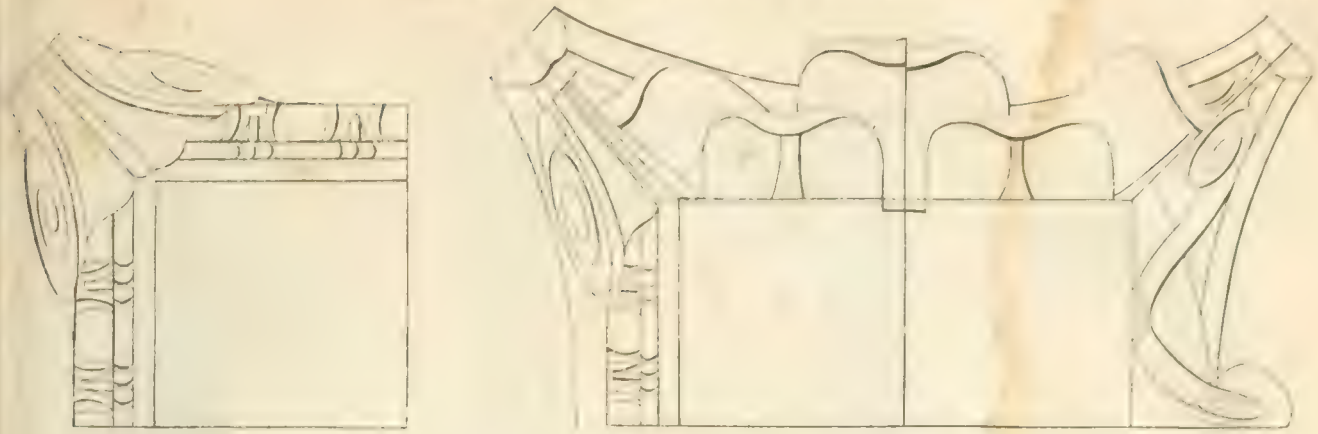


Heights.



The COMPOSITE ORDER.





PEDESTALS

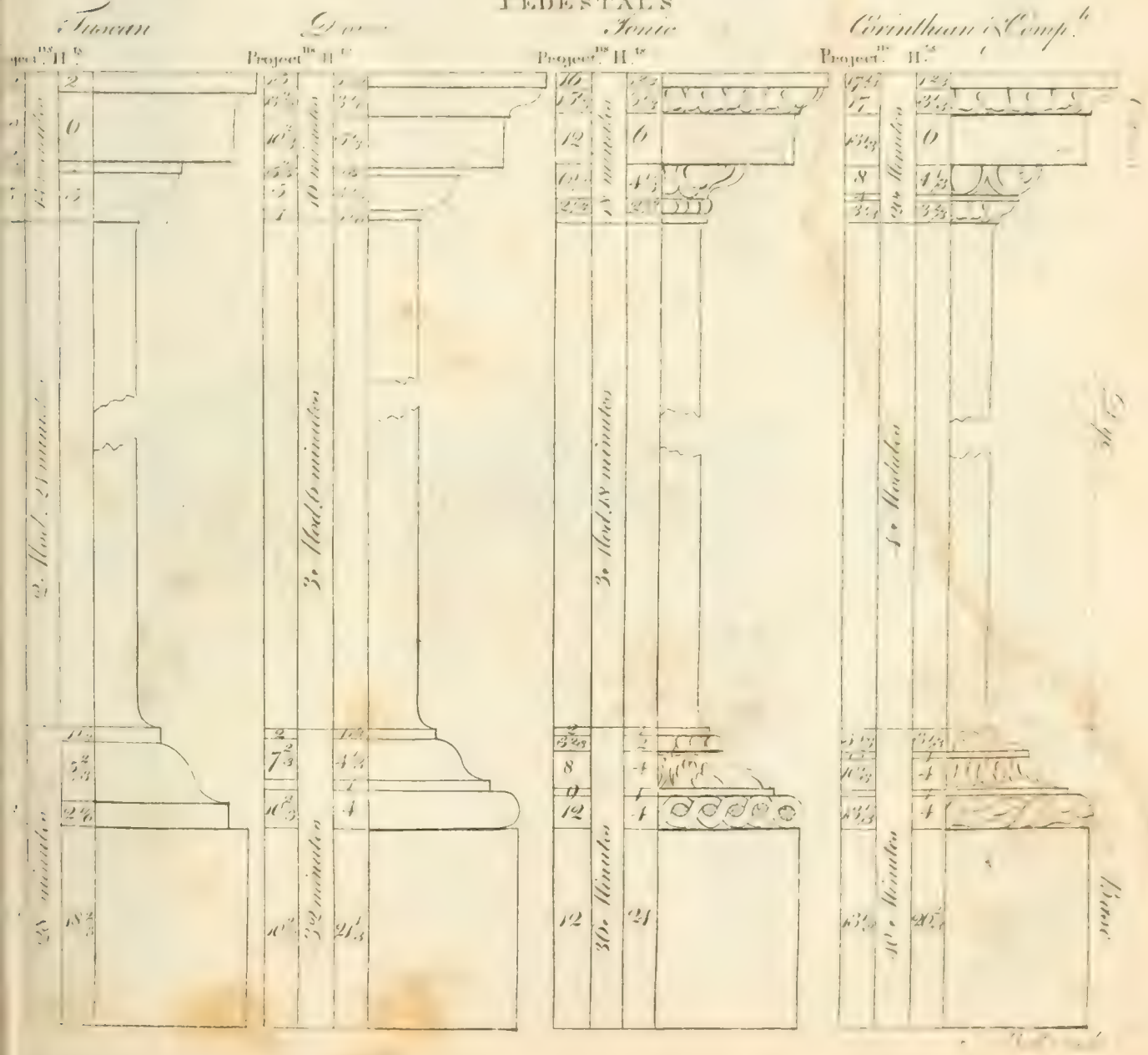

Tuscan
Doric
Ionic
Corinthian & Comp.te
Project.rs
H.ts
2. Mod. 24 minutes
3. Mod. 30 minutes
3. Mod. 36 minutes
4. Modules
38 minutes
32 minutes
30. Minutes
32. Minutes
Base

Fig. 1

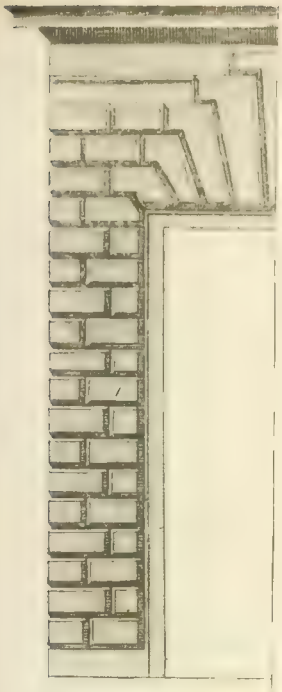


Fig. 2

Fig. 3

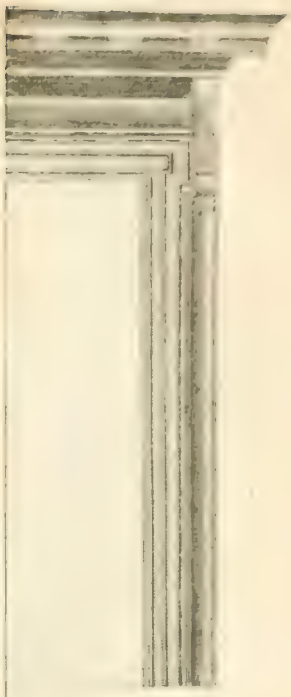


Fig. 4.

Fig. 5.

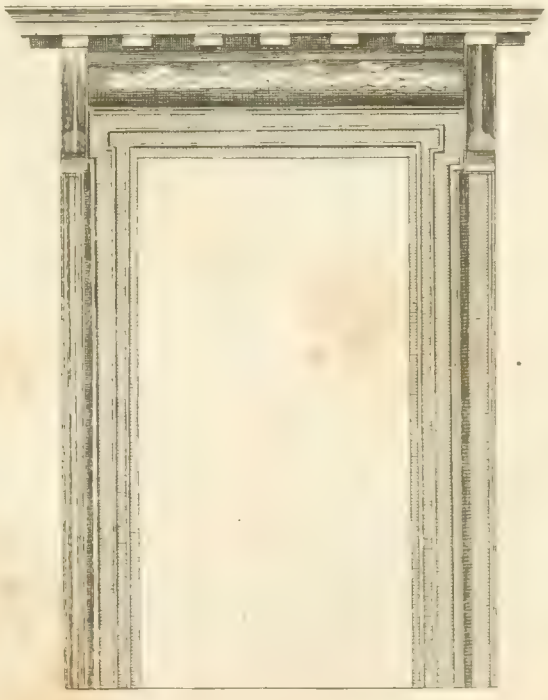
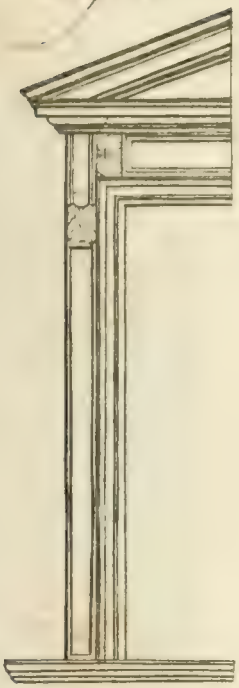


Fig. 6

Fig. 1.



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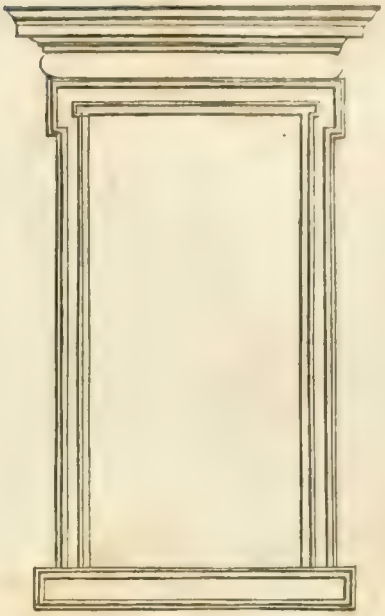

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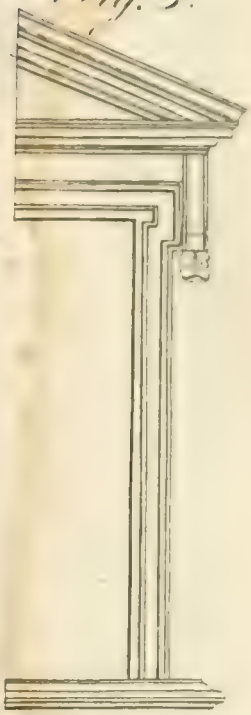

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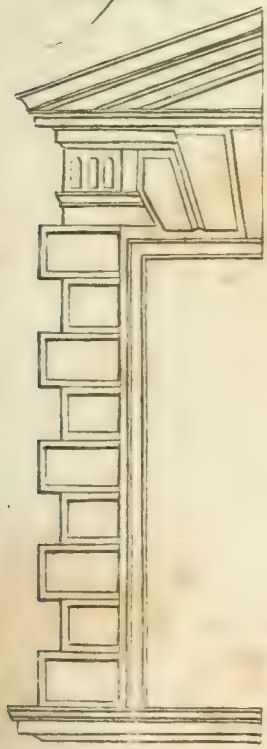

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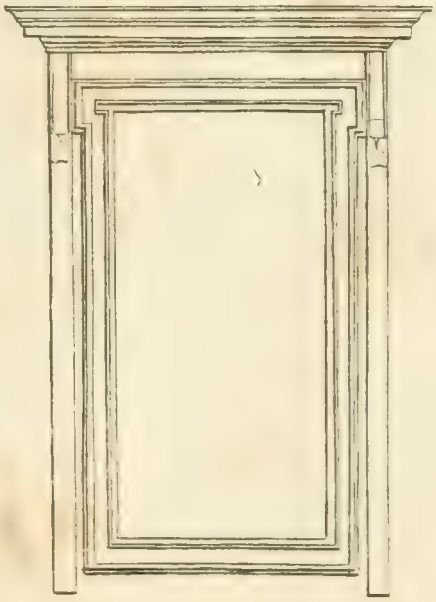

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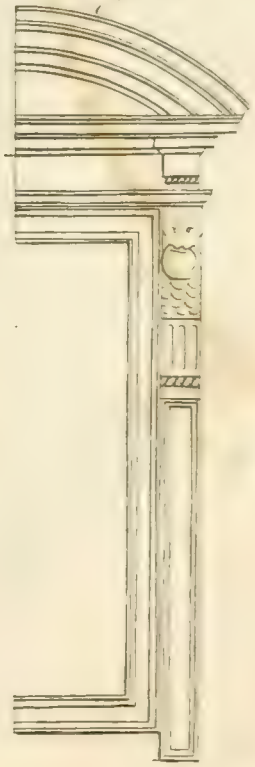
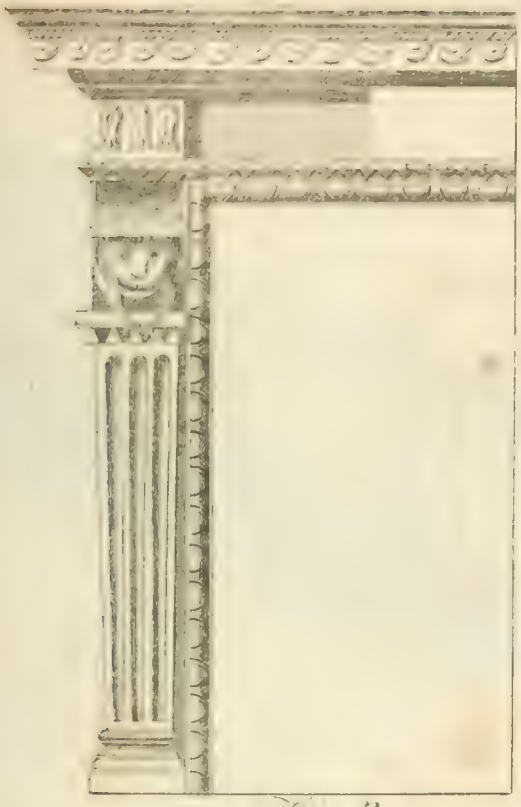


Fig 2



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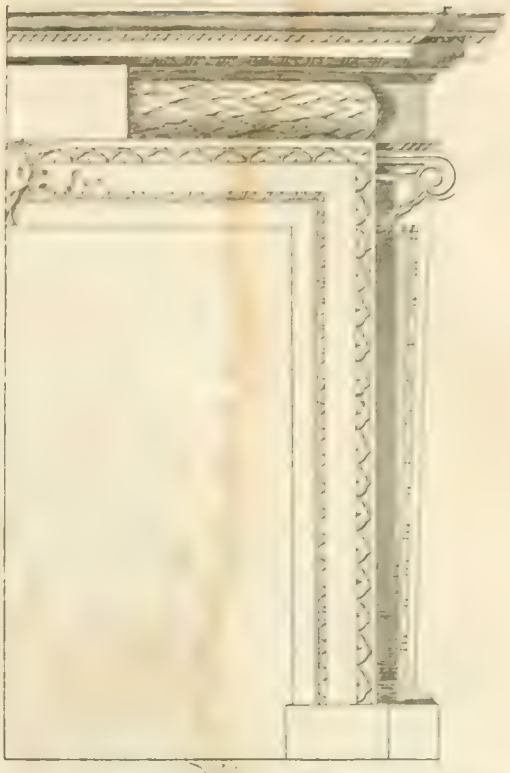

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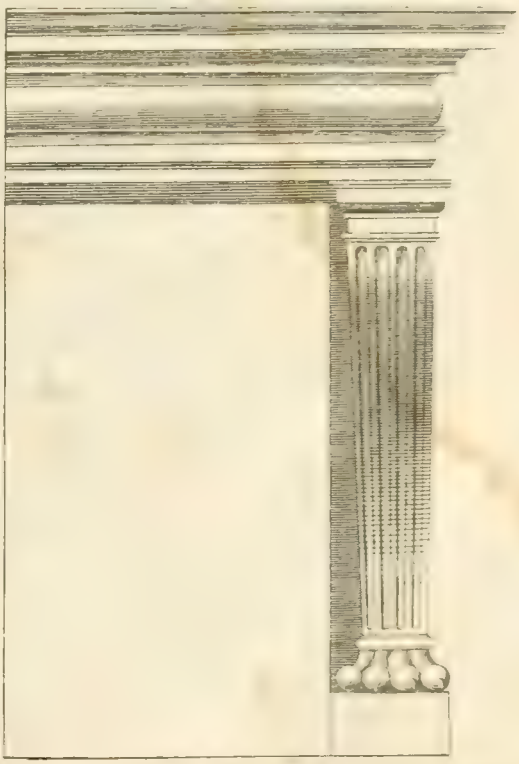


Fig. 1.

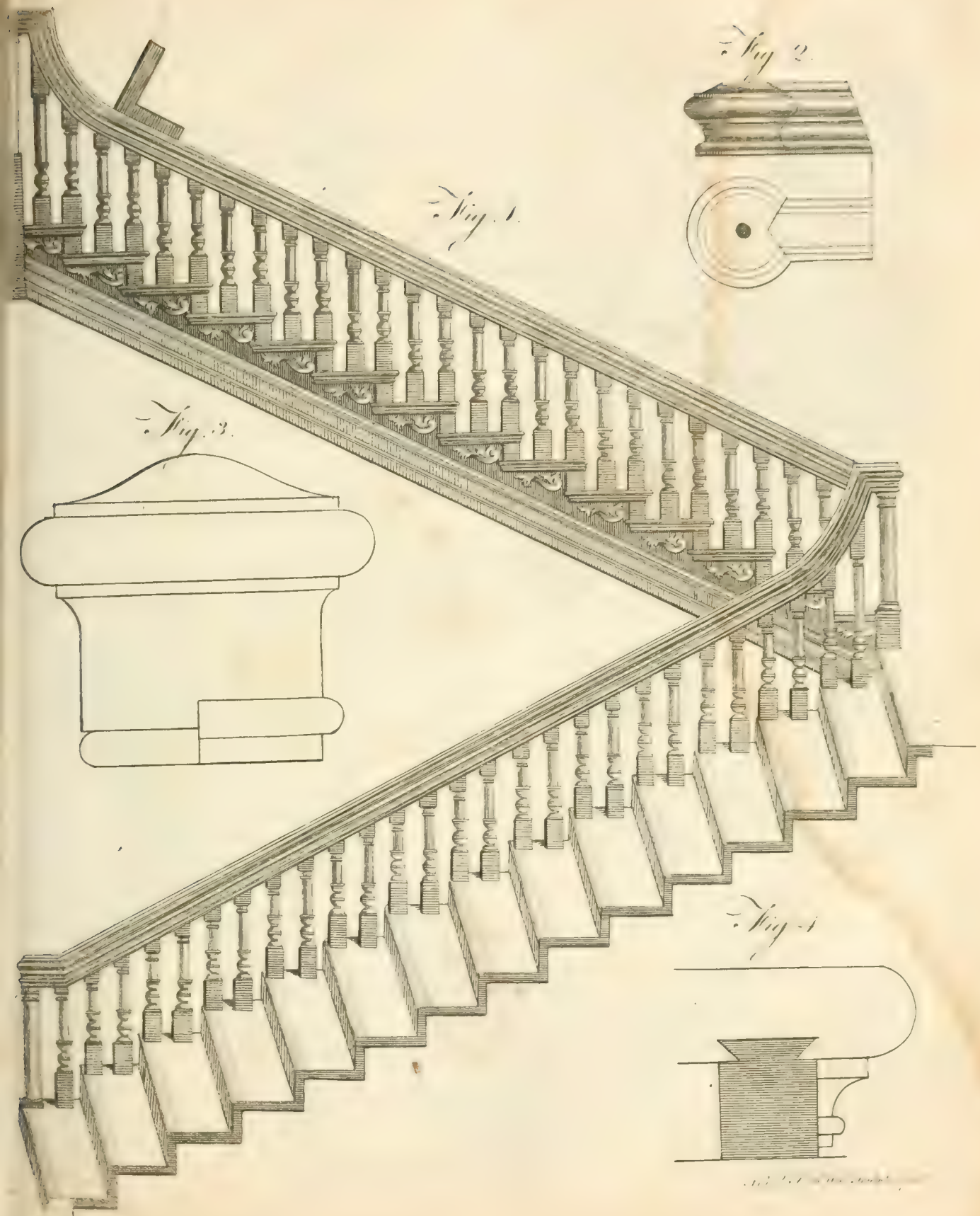


Fig. 2.

Fig. 3.

Fig. 4

Fig. 3.

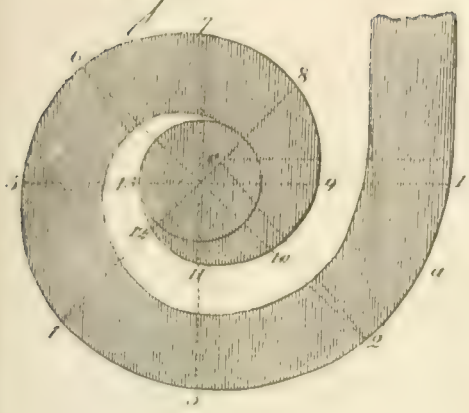


Fig. 1

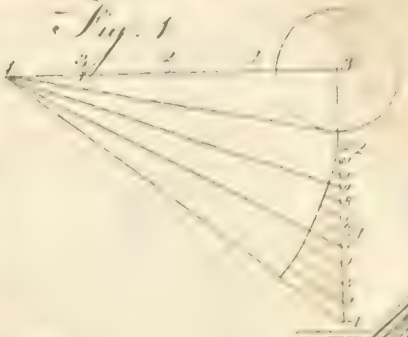


Fig. 1.

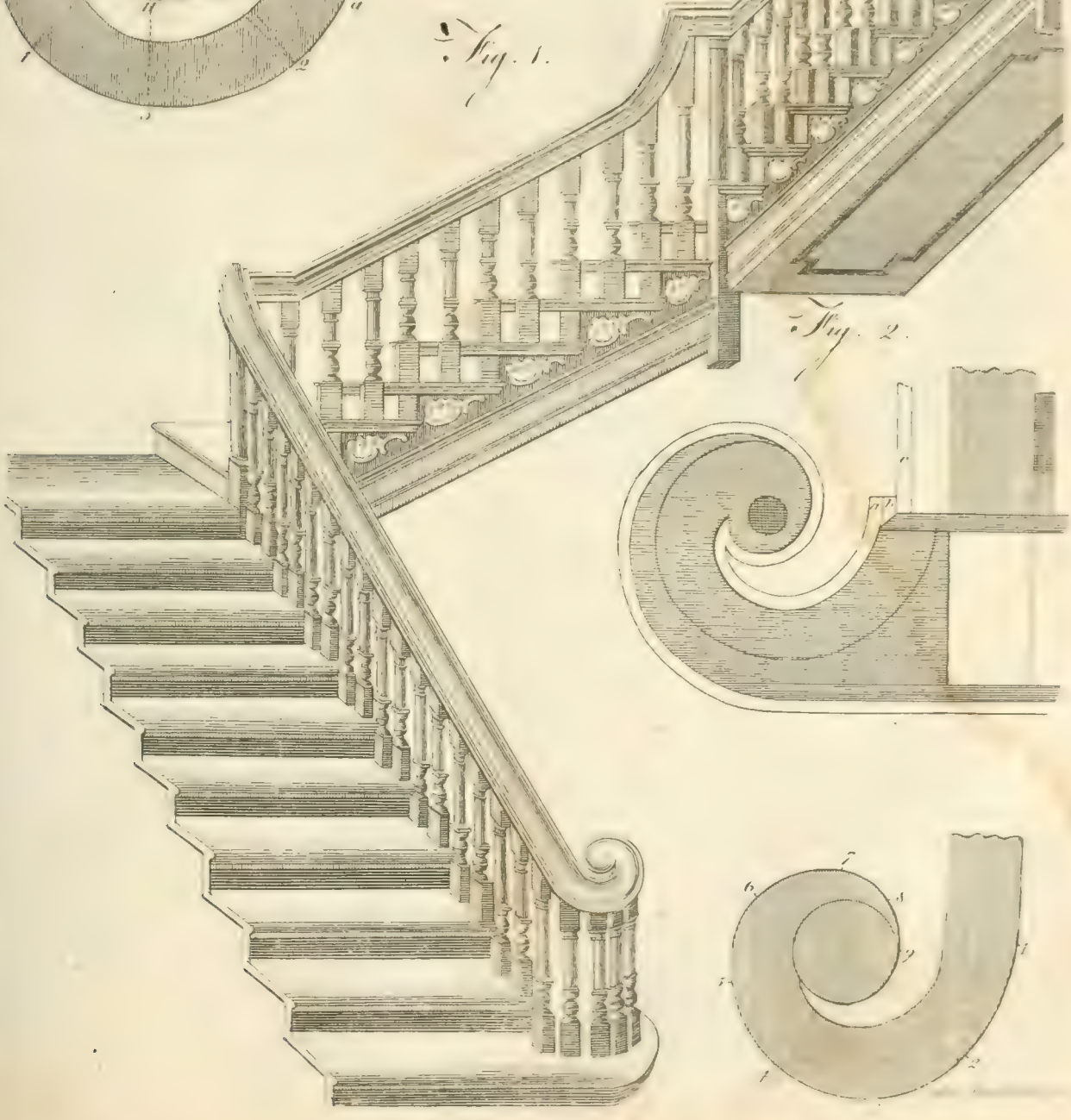
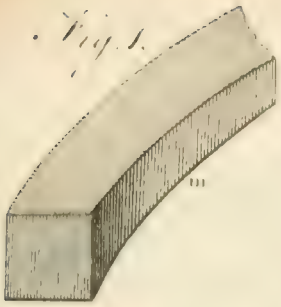


Fig. 2.

Fig. 1.



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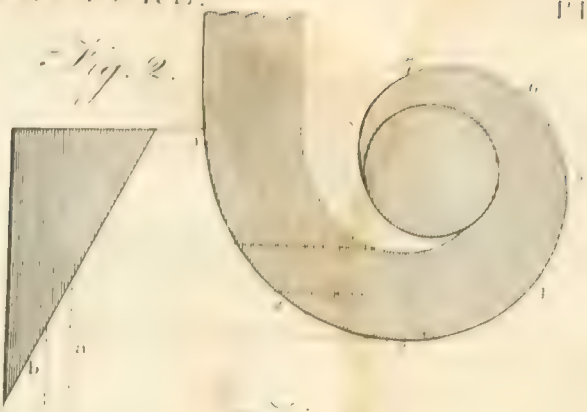

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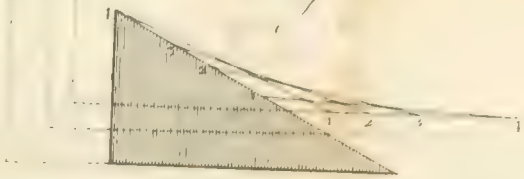
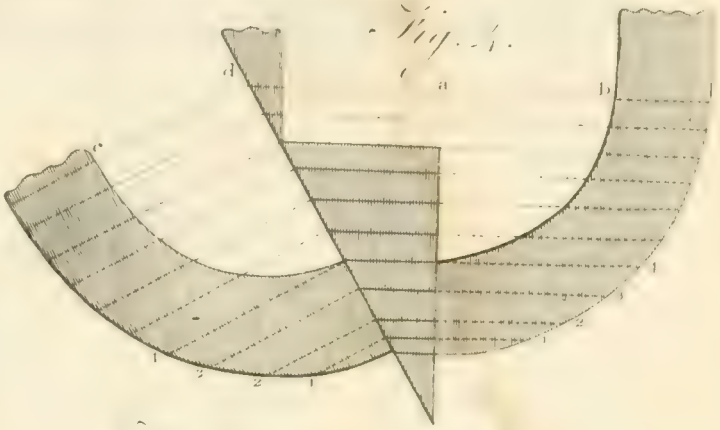


Fig. 4.



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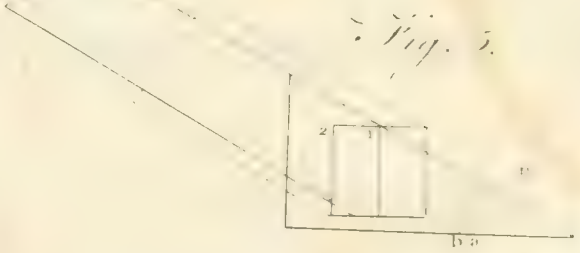

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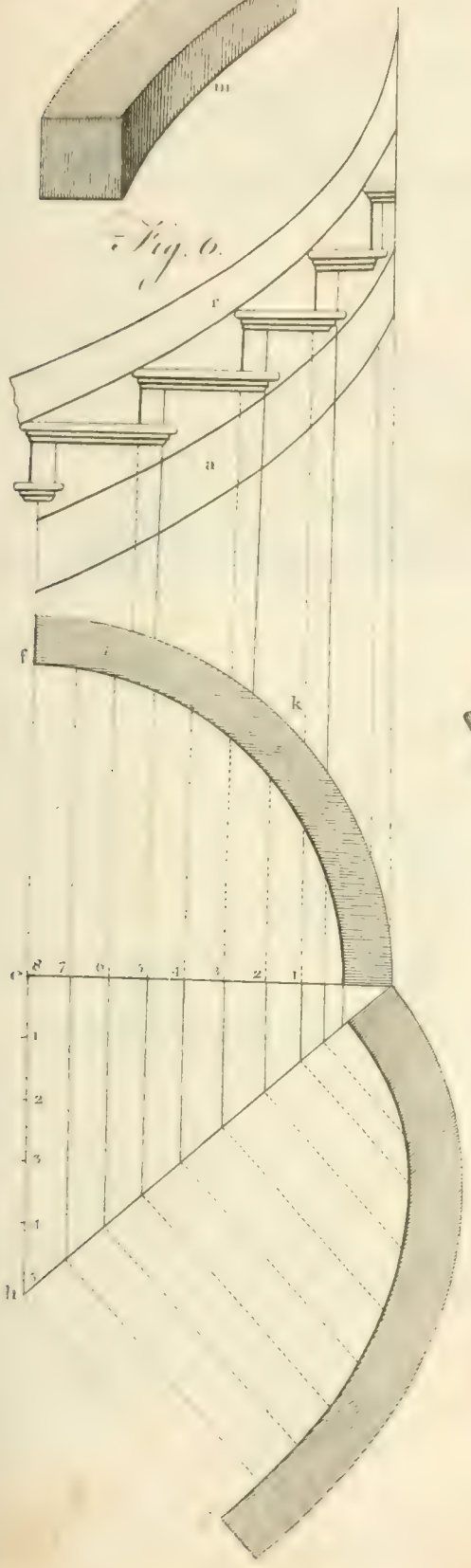

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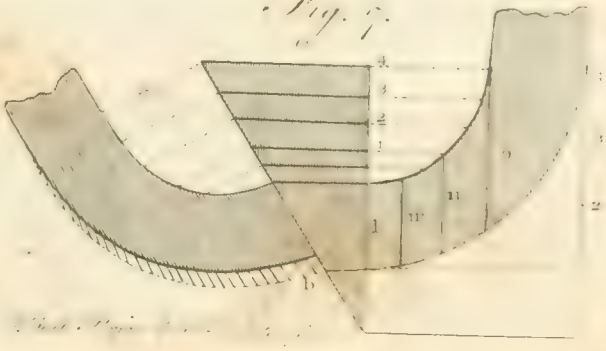


Fig. 1

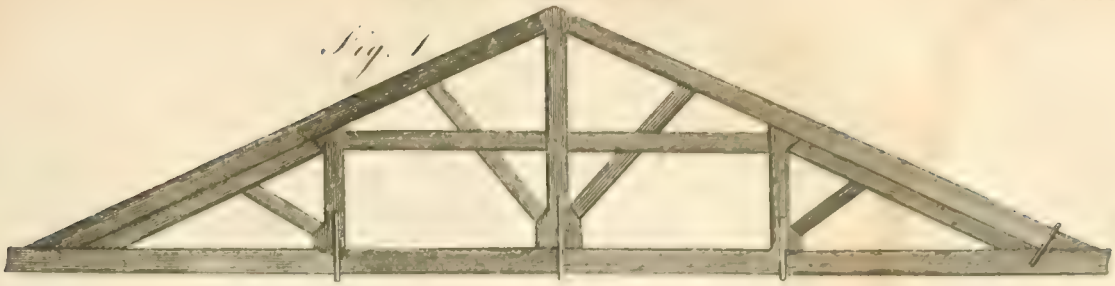
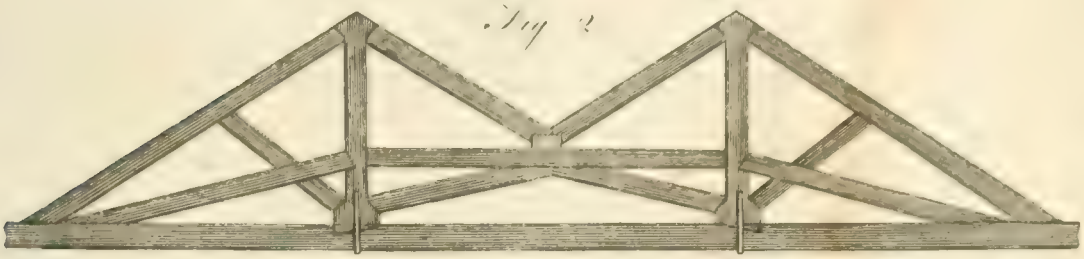


Fig. 2



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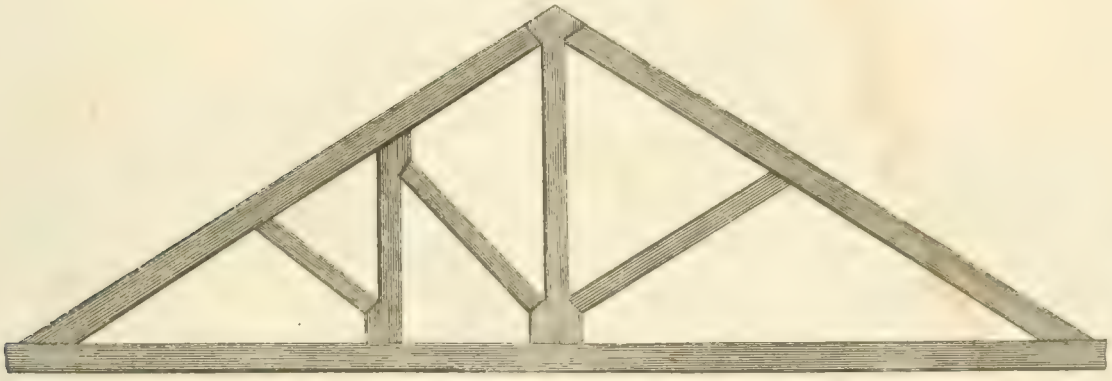


Fig. 4.

Fig. 5.

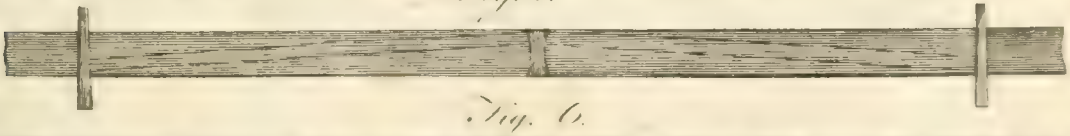
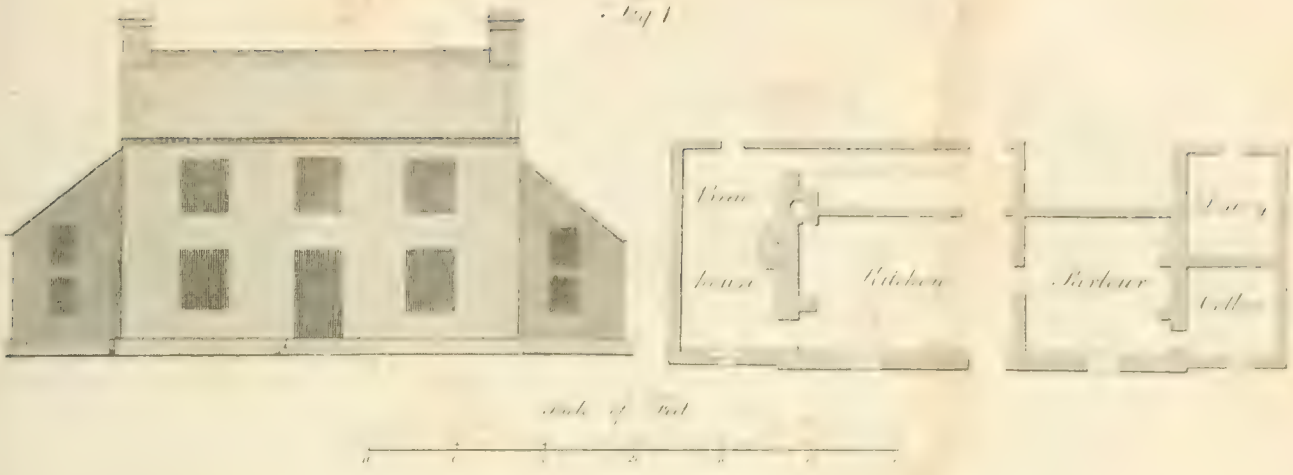


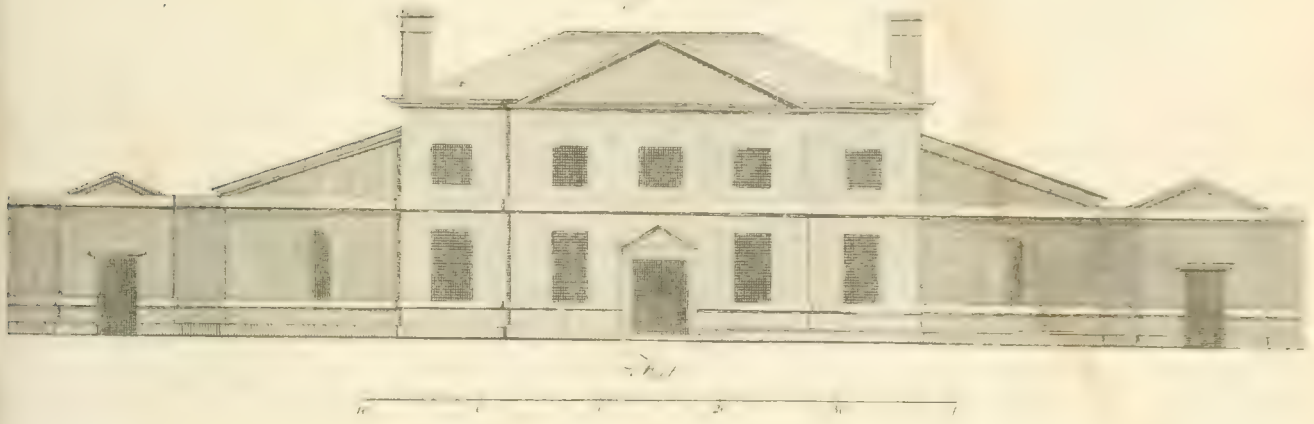
Fig. 6.

Fig 1

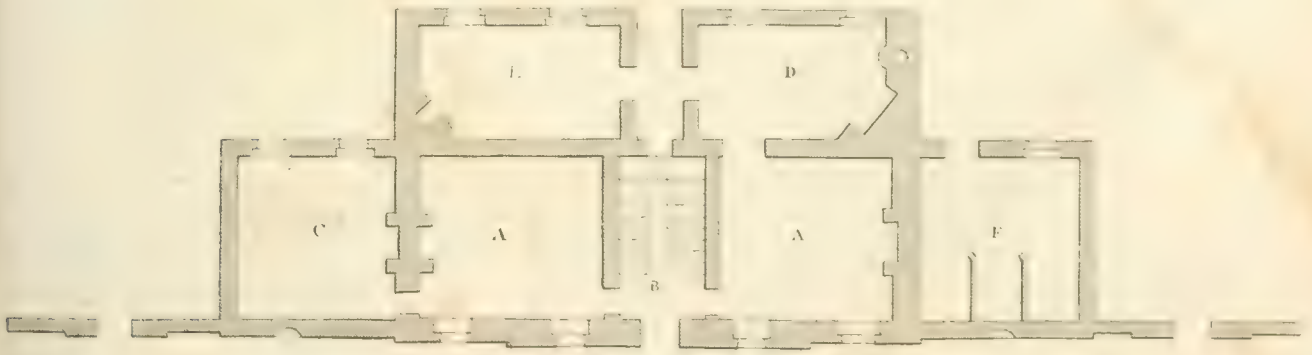


Scale of Feet

Fig 2

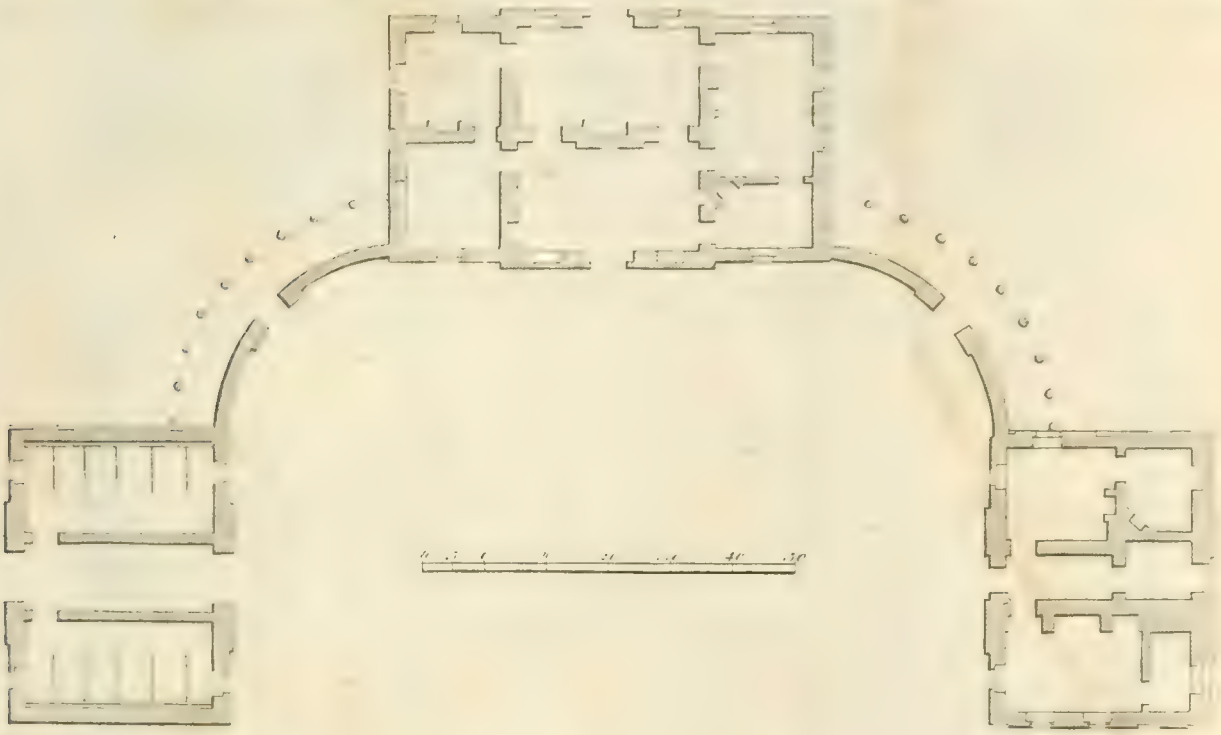


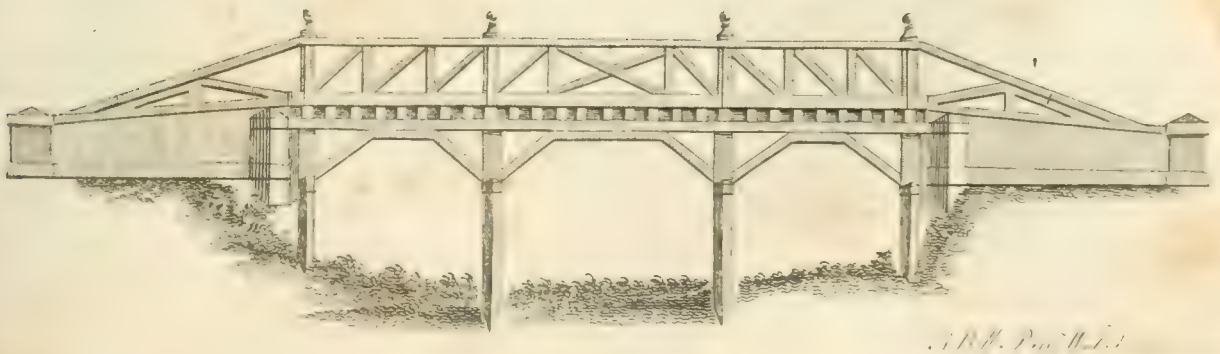
Scale of Feet

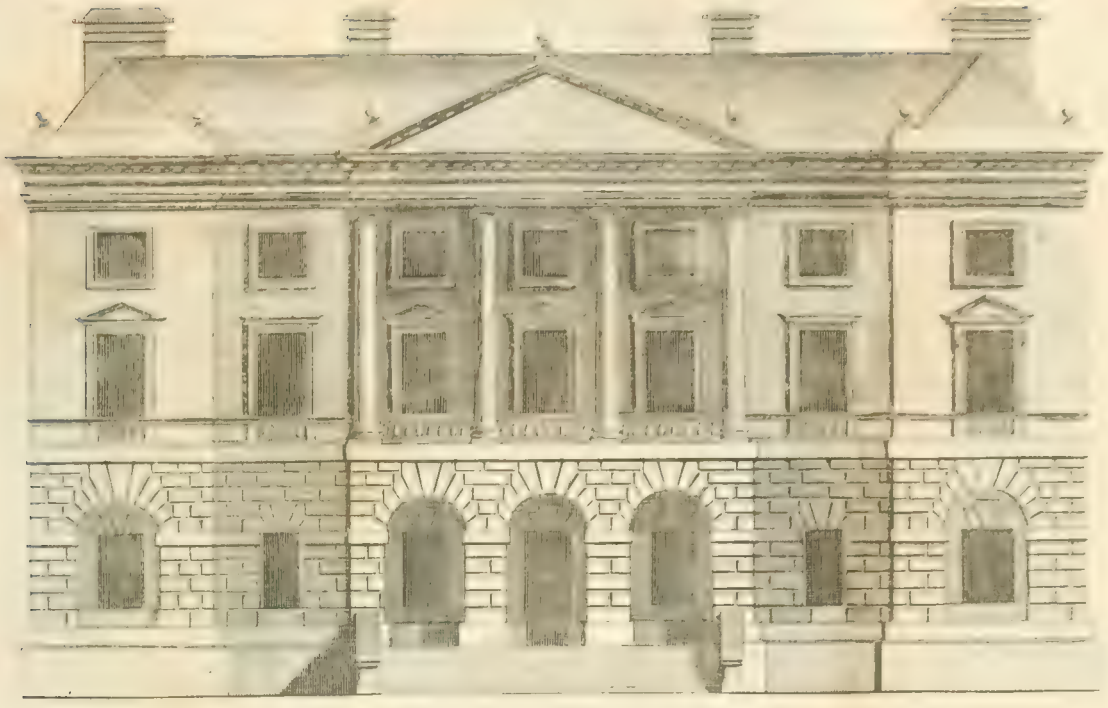


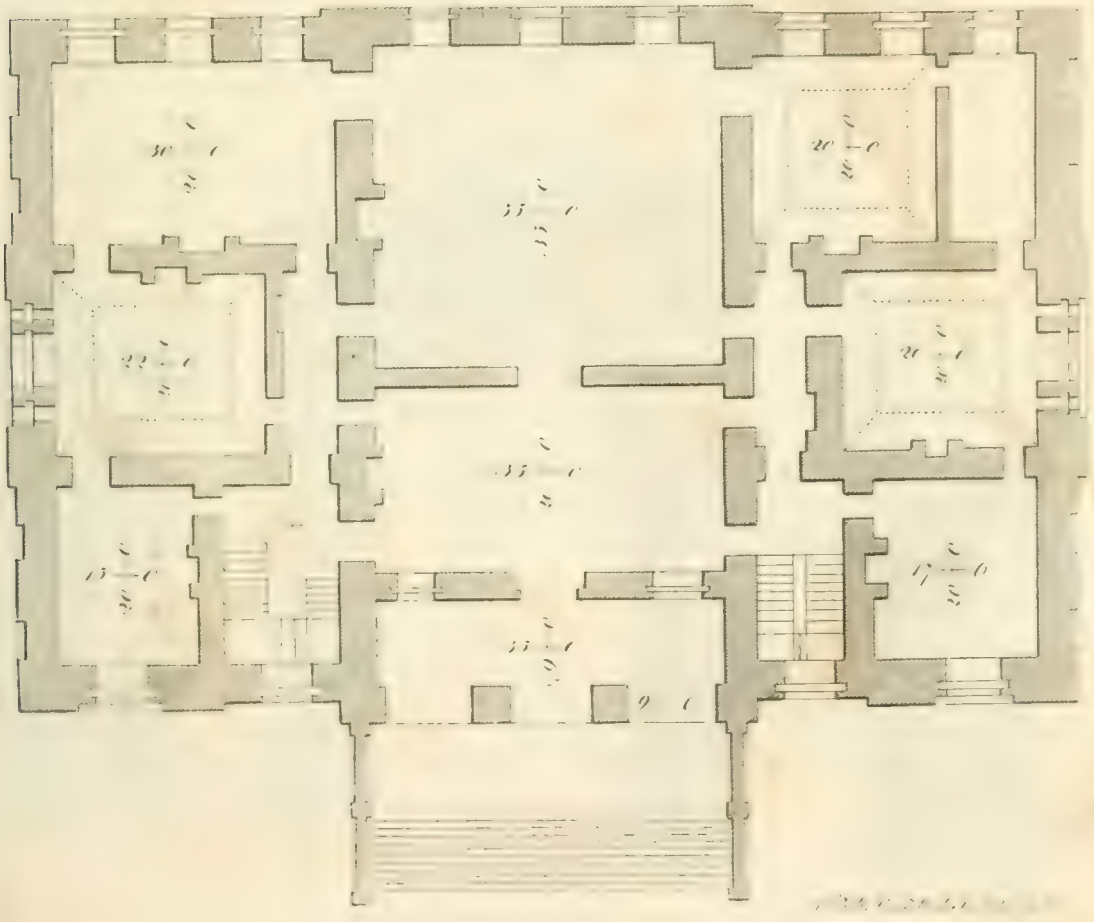
AA are two Parlours 15 D Kitchen
B Hall 12 E Wash house
C Study F Stable

are Rooms









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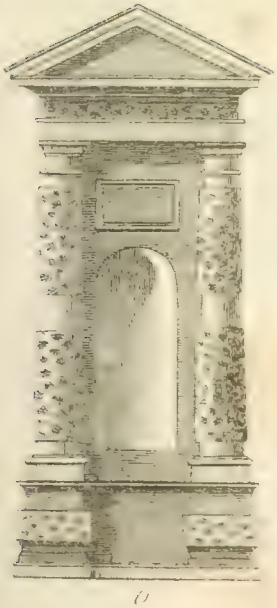

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4

Drawn for Gales & Seaton

Archive || Archons.

ARCHIVE, or ARCHIVES, a chamber or apartment wherein the records, charters, and other papers and evidences, of a ſtate, houſe, or community, are preſerved, to be conſulted occaſionally.

We ſay, the *archives* of a college, of a monaſtery, &c. The archives of ancient Rome were in the temple of Saturn; the archives of the court of chancery are in the rolls office.

ARCHIVIST, ARCHIVISTA, a keeper of an archive.

Under the emperors, the archiviſt was an officer of great dignity, held equal to the proconſuls, veſted with the quality of a count, ſtyled *clariſſimus*, and exempted from all public offices and taxes. Among the ancient Greeks and Perſians, the truſt was committed to none but men of the firſt rank; among the Franks, the clergy being the only men of letters, kept the office among themſelves. Since the erection of the electoral college, the archbiſhop of Mentz has had the direction of the archives of the empire.

ARCHMARSHAL, the grand marſhal of the empire, a dignity belonging to the elector of Saxony.

ARCHONS, in Grecian antiquity, were magiſtrates appointed after the death of Codrus*. They were choſen from the moſt illuſtrious families till the time of Ariſtides, who got a law paſſed, by which it was enacted, that, in electing theſe magiſtrates, leſs regard ſhould be paid to birth than to merit.

* See the article *Attica*.

The tribunal of the archons was compoſed of nine officers. The firſt was properly the *archon*; by whoſe name the year of his adminiſtration was diſtinguiſhed. The title of the ſecond was *king*; that of the third, *polemarchus*: to theſe were added ſix *theſmothetæ*. Theſe magiſtrates, elected by the ſcrutiny of beans, were obliged to prove, before their reſpective tribes, that they had ſprung, both in their father's and their mother's ſide, for three deſcents, from citizens of Athens. They were likewiſe to prove that they were attached to the worſhip of Apollo, the tutelary god of their country; that they had in their houſe an altar conſecrated to Apollo; and that they had been reſpectfully obedient to their parents; an important and ſacred part of their character, which promiſed that they would be faithful ſervants to their country. They were likewiſe to prove, that they had ſerved in a military capacity the number of years which the republic required of every citizen: and this qualification gave the ſtate experienced officers; for they were not allowed to quit the army till they were 40 years old. Their fortune too, of which they were to inform thoſe before whom they were examined, was a warrant for their fidelity.

After the commiſſioners, who were appointed to inquire into their character and other requiſites, had made a report of them, they were then to ſwear that they would maintain the laws; which obligation if they neglected, they engaged to ſend to Delphi a ſtatue of the weight of their bodies. According to a law of Solon, if an archon got drunk, he was condemned to pay a heavy fine, and ſometimes even puniſhed with death. Such magiſtrates as the Athenian archons were well entitled to reſpect. Hence it was eternal infamy to inſult them; and hence Demoſthenes obſerved, that to treat the theſmothetæ with diſreſpect, was to ſhow diſreſpect to the republic.

Archons || Archpriest.

Another qualification indiſpenſably required of the ſecond officer of this tribunal, who was called the *king*, was that he had married the daughter of an Athenian citizen, and that he had eſpouſed her a virgin. This was exacted of him, ſays Demoſthenes, becauſe part of his duty was to ſacrifice to the gods jointly with his wife, who inſtead of appeaſing, would have irritated them, if ſhe had not poſſeſſed both theſe honours.

The inquiry into the private title of the nine archons was very ſevere; and this attention was the more neceſſary, as they had a right to take a ſeat in the Areopagus, after they had quitted their office, and given an account of their adminiſtration.

When any obſcurity occurred in the laws relative to religion and the worſhip of the gods, the interpretation was ſubmitted to the tribunal of the archons.

Ariſtotle obſerves, that Solon, whoſe aim was to make his people happy, and who found their government in his time ariſtocratical, by the election of the nine archons, who were annual magiſtrates, tempered their power, by eſtabliſhing the privilege of appealing from them to the people, called by lot to give their ſuffrage, after having taken the oath of the Heliaſtæ, in a place near the Panathenæum, where Hiſſus had formerly calmed a ſedition of the people, and bound them to peace by an oath.

The archons were the principal officers, not only in civil, but likewiſe in ſacred matters, and eſpecially in the myſteries of Bacchus. The archons, however, who were ſurnamed *eponymi*, were chiefly employed in civil affairs; yet they preſided at the great feaſts, and held the firſt rank there. Hence they are ſometimes ſtyled *prieſts*.

ARCHON is alſo applied by ſome authors to divers officers, both civil and religious, under the eaſtern or Greek empire. Thus biſhops are ſometimes called *archontes*; and the ſame may be ſaid of the lords of the emperor's court. We alſo read of the *archons of the antimenſia*, *archon of archons*, *grand archon*, *archon of churches*, *archon of the goſpel*, *archon of the walls*, &c.

ARCHONTICI, in church hiſtory, a branch of Valentinians, who maintained that the world was not created by God, but by angels called *Archontes*.

ARCHPRIEST, ARCHPRESBYTER, a prieſt or preſbyter eſtabliſhed in ſome dioceſes, with a pre-eminence over the reſt. Anciently the archprieſt was the firſt perſon after the biſhop: he was ſeated in the church next after the biſhop; and even acted as his vicar, in his abſence, as to all ſpiritual concerns. In the fixth century, there were found ſeveral archprieſts in the ſame dioceſe; from which time ſome will have them to have been called *deans*. In the ninth century, they diſtinguiſhed two kinds of cures or pariſhes: the ſmaller governed by ſimple prieſts; and the baptiſmal churches by archprieſts; who, beſides the immediate concern of the cure, had the inſpection of the other inferior prieſts, and gave an account of them to the biſhop, who governed the chief or cathedral church, in perſon. There are archpreſbyters ſtill ſubſiſting in the Greek church; veſted with moſt of the functions and privileges of chorepiſcopi or rural deans.

Archtreasurer || Archytas.

ARCHTREASURER, the great treaſurer of the German empire. This office was created with the eighth electorate, in favour of the elector Palatine, who had loſt his former electorate, which was given to the duke of Bavaria, by the emperor Ferdinand II. who took it away from Frederic V. elector Palatine, after the battle of Prague, where he was defeated in maintaining his election to the crown of Bohemia. The dignity of archtreaſurer was conteſted between the elector of Brunſwick, who claimed it in virtue of his deſcent from the elector Frederic, and the elector Palatine.

ARCHILUTE, Arcileuto, a long and large lute, having its baſs ſtrings lengthened after the manner of the theorbo, and each row doubled, either with a little octave or an uniſon. It is uſed by the Italians for playing a thorough baſs.

ARCHYTAS of Tarentum, was a Pythagorean philoſopher, and alſo well ſkilled in mathematics and geography. He lived in the time of Plato, and according to report, interpoſed his influence with Dionyſius the tyrant, in order to ſave the life of that renowned philoſopher. According to this date, it would appear that Jamblichus is miſtaken when he aſſerts, that he was a hearer of Pythagoras; and the teſtimony of a writer mentioned by Photius, would ſeem more worthy of credit, that he was the eighth ſucceſſive preceptor of the Pythagorean ſchool. But his fame was not confined to the circle of literature; for ſo eminent were his military talents, that, in oppoſition to an expreſs law of his country, that no man ſhould be choſen more than once the general of its armies, he was elevated to that important ſtation no leſs than ſeven times. He adopted the ſentiments of Pythagoras in his diſſertations on ſpeculative philoſophy. He taught in morality, that there is nothing ſo deſtructive to man as pleaſure; that in every condition of ſociety, virtue is to be purſued for its own merit, and that every extreme is incompatible with virtue. Ariſtotle was indebted to Archytas for his general heads of arrangement, entitled his "Ten Categories," and very probably for that principal idea in his Ethics, that virtue conſiſts in avoiding exceſſes. By diſcovering the duplication of the cube by means of the conic ſections, and the method of finding two mean proportionals between two given lines, he diſplayed his great knowledge in mathematics. He is reported to have invented ſeveral curious hydraulic machines, and to have made a kind of winged automaton; and his genius is likewiſe honoured with the invention of the ſcrew and crane. In a beautiful ode, Horace records his ſad fate, in being caſt upon the Apulian ſhore, an unburied corpſe; and mentions him as an excellent aſtronomer and geographer.

Te maris et terræ numeroque carentis arenæ
Menſorem cohibent, Archyta,
Pulveres exigui prope litus parva Matinum
Munera: nec quidquam tibi prodeſt
Aerias tentaſſe domos, animoque rotundum
Percurriſſe polum, morituro.

Archytas, what avails thy nice ſurvey
Of ocean's countleſs ſands, of earth, and ſea?
In vain thy mighty ſpirit once could ſoar
To orbs celeſtial, and their courſe explore.
If here, upon the tempeſt-beaten ſtrand,
You lie confin'd, till ſome more lib'ral hand
Shall ſtrew the pious duſt in funeral rite,
And wing thee to the boundleſs realms of light.

Arcis-ſur-Aube || Arctotis.

FRANCIS.

A ſingular modeſty, and a firm command of his paſſions, were the leading features in his moral character. In his anger he never chaſtiſed any of his ſervants. He ſaid one day to a certain dependant who had diſobliged him, "What ſhould I have done to you if I had not been angry?" He maintained a uniform decency not often obſerved in ancient writings.

A ſmall treatiſe, entitled *Περὶ τῦ Παντος Φυσεως*, "On the Univerſe," and ſome other ſmall fragments, "On Wiſdom," and "On the Good and Happy Man," are the only pieces aſcribed to this philoſopher that are ſtill extant.

ARCIS-SUR-AUBE, a ſmall town of France, in Champagne, now the department of Aube, ſeated on the river Aube. E. Long. 4. 15. N. Lat. 48. 40.

ARCO, a ſtrong town and caſtle in the Trentin, belonging to the houſe of Auſtria. It was taken by the French in 1703, and abandoned ſoon after. It ſtands on the river Sarca, near the north extremity of the lake Garda, E. Long. 9. 55. N. Lat. 45. 52.

ARCONA, a ſtrong town ſituated on the iſland of Rugen in the Baltic. It ſtood on a high promontory, with the eaſt, north, and ſouth ſides defended by ſteep and lofty precipices, and the weſt by a wall 50 feet high, proportionably thick, and ſecured by a deep and broad ditch. It was, however, taken and ruined, in 1168, by Valdemar king of Denmark. One of the conditions impoſed by the conqueror was, that the inhabitants ſhould deſtroy a temple they had erected to St Vitus, and deliver up the vaſt treaſure belonging to this tutelary ſaint. Another was, that they ſhould pay 40 ſilver yokes for oxen, by way of tribute, and enter as ſoldiers in the Daniſh ſervice when called upon.

ARCOS, a ſtrong city of Andaluſia, in Spain, ſeated on a high craggy rock, at the bottom of which runs the Guadeleto. Its ſtrength lies not only in its ſituation, but in the works erected for its defence, and it is inacceſſible on every ſide but one. The governor reſides in an old caſtle, from whence there is a delightful proſpect, which extends very far into the neighbouring country. W. Long. 2. 10. N. Lat. 36. 40.

ARCTIC, in *Aſtronomy*, an epithet given to the north pole, or the pole raiſed above our horizon. It is called the *arctic pole*, on occaſion of the conſtellation of the little bear, in Greek called *ἀρκτος*; the laſt ſtar in the tail whereof nearly points out the north pole.

Arctic Circle is a leſſer circle of the ſphere, parallel to the equator, and 23° 30′ diſtant from the north pole; from whence its name. This, and its oppoſite, the *antarctic*, are called the two *polar circles;* and may be conceived to be deſcribed by the motion of the poles of the ecliptic, round the poles of the equator, or of the world.

ARCTIUM, Burdock. See Botany *Index*.

ARCTOPHYLAX, (from *ἀρκτος*, *bear*, and *φυλαττω*, *I guard*), in *Aſtronomy*, a conſtellation, otherwiſe called *Bootes*.

ARCTOPUS. See Botany *Index*.

ARCTOTIS. See Botany *Index*.

ARCTURUS,

Arctarus || Ardebil.

ARCTURUS, in *Aſtronomy*, a fixed ſtar, of the firſt magnitude, in the conſtellation Arctophylax, or Bootes. The word is formed of ἄρκτος, bear, and οὐρά, *tail*, q. d. *bear's tail*, as being very near it. This ſtar was known to the ancients, as in the following verſe of Virgil:

Arcturum, pluviaſque Hyades, geminaſque Triones.

See alſo Job ix. 9. xxxviii. 32.

ARCUATION, in *Gardening*, the method of raiſing trees by layers, which is done in the following manner.

Strong mother plants or ſtools muſt be planted in a clear border, and in a ſtraight line, about ſix feet aſunder. When theſe have ſhot five or ſix main branches from the roots, and as many collateral branches, the former muſt be bent to the ground, and there faſtened. The ſmall branches muſt be covered three inches deep upon the joints, and have a large baſon of earth made round them to hold the water.

About the middle of September they may be opened, and if they have taken root, may be immediately removed into the nurſery; but if they have not ſufficiently extended their roots, they muſt be ſuffered to remain till the ſpring, and then tranſplanted.

ARCUCCIO, Arcutio, a machine made of a board, covered with pieces of hoops, like the tilt of a waggon; uſed in Italy to prevent children from being overlaid and ſmothered by nurſes or others. Every nurſe in Florence is obliged to lay her child in an arcutio, under pain of excommunication.

ARDAMON, or Ardama, in *Antiquity*, a veſſel of water placed at the door of a perſon deceaſed, till the time of burial, as a token that the family was in mourning, and to ſerve to ſprinkle and purify perſons as they came out of the houſe.

ARDASSES, in *Commerce*, the coarſeſt of all the ſilks of Perſia; and as it were the refuſe of each kind. In this ſenſe, they ſay, the *legis*, the *houſets*, the *choufs*, and the *payas ardaſſes*, to ſignify the worſt of thoſe four ſorts of Perſian ſilks.

ARDASSINES, in *Commerce*, called in France *ablaques*; a very fine ſort of Perſian ſilks, little inferior in fineneſs to the ſourbaſtis, or rather cherbaffis; and yet it is little uſed in the ſilk manufactures of Lyons and Tours, becauſe that kind of ſilk will not bear hot water in the winding.

ARDEA, the crane. See Ornithology *Index*.

Ardea, in *Ancient Geography*, a town of Latium, the royal reſidence of Turnus king of the Rutuli, (Livy); ſo called, either from the augury of the heron, (Hyginus); or from the exceſſive heat of the country, (Martial). It was in a marſhy, ſickly ſituation, (Strabo, Seneca). It was built by Danaë, the mother of Perſeus, (Virgil); above five miles diſtant from the ſea, and 20 from Rome: now a hamlet. It was a Roman colony, (Livy); the inhabitants called *Ardeates*. E. Long. 17. 49. N. Lat. 41. 30.

ARDEBIL, or Ardevil, a town of Perſia in the province of Aderbijan. It was taken and burnt by Jenghiz Khan, in 1222, when moſt of the inhabitants were deſtroyed: but it has been ſince rebuilt; and is ſtill ranked for dignity among the beſt cities of the kingdom, on account of its having been the reſidence and burying-place of ſome of the Perſian kings; particularly the ſepulchre of Sheik Sefi is at this place, to which the people reſort in pilgrimage. He founded a place, which they call his kitchen, with a revenue ſufficient to maintain 1000 poor people, and to feed them three times a-day. Three or four of the largeſt principal ſtreets have ſhops, and are planted on each ſide with elms and linden trees, to keep off the exceſſive heat of the ſun; but the houſes are poorly built, with bricks dried in the ſun: yet moſt of them, that are not in the bazars or market places, have the pleaſure and conveniency of a garden full of trees bearing fruit; and there are large ſpots in the out parts of the town, where the houſes are at a diſtance from each other, and the ſpaces between planted with trees, which render the city of a large extent. The meidan, or great ſquare, is 300 paces long, and 150 broad, having ſhops all round; which, when this place was in a flouriſhing condition, were ſtored with all manner of valuable commodities.

Ardea || Ardenn.

Through the city there paſs two branches of a rivulet, which are ſometimes enlarged by the melting of the ſnow on the mountains, ſo that they have been forced to make canals to divert the ſtream. In the reign of Shah Abbas, it broke down the dikes and carried away a great number of houſes. The city is without walls, and is ſeated in the midſt of a large plain encompaſſed with mountains, the higheſt of which lies weſtward, and is always covered with ſnow. Theſe render the air ſometimes extremely hot, and at others intolerably cold, which occaſions epidemical diſtempers, that carry off great numbers of people. The ſoil produces no fruit near the city but apples, pears, and peaches; and yet is good both for corn and paſture. The ſheep are ſo numerous, that 100,000 have paſſed over the city bridge in a day. There are here ſeveral ſorts of mineral waters, which ſerve both for common bathing, and for the cure of various diſeaſes; one of theſe is a ſulphureous ſpring, whoſe exhalations render the circumambient air extremely diſagreeable. There are three ſprings which produce water as hot as if it was boiling; and from which, waters are conveyed to the public baths in the city. About half a league from the city, on the right hand of the public road, there is a pool of ſtanding water, which is covered all over with ſalt like ice. E. Long. 47. 30. N. Lat. 37. 55.

ARDECHE, a department of France, which derives its name from a river, and comprehends part of Dauphiny.

ARDEN, the common name of foreſts among the Celtæ, from the widely extenſive one which ranged for 500 miles acroſs the country of Gaul, or that which covered more than half the county of Warwick in Britain, and the ſites of which ſtill retain the appellation of *Arden*, to the much ſmaller one of the ancient Mancenion, that covered and ſurrounded the ſite of the preſent Mancheſter. It is written *Arduen* by Cæſar and Tacitus in ſpeaking of the foreſt in Gaul, and *Ardven* by Oſſian in mentioning the woods of Caledonia. It cannot (ſays Mr Whitaker) be compounded of *ar* the prepoſitive article in Celtic, and the ſubſtantive *den*, as Baxter and Camden aſſert it to be; but is formed of *ard* an adjective, and *uen* the ſame as *den*. The meaning of the name therefore is not, as Mr Baxter renders it, ſimply *the hills*, or even, as the ingenious tranſlator

Ardenburg || Ardrah.

of Oſſian interprets it, the *high hill*. *Ard* ſignifies either *high* or *great*, and *ven* or *den* either a *hill* or *wood*. *Arduen*, *Ardven*, or *Arden*, then, means a conſiderable wood. Hence, only, the name became applicable to ſuch very different ſites, as the *plains* of Warwickſhire and the *hills* of Scotland: and it was given, not only to the moſt extenſive foreſts, to that which was the greateſt in Gaul, or ſo conſiderable in Britain; but to many that were important only within their own contracted diſtricts, as the wood of Mancenion above mentioned, and others.

ARDENBURG, a town of the Netherlands, in Dutch Flanders, and formerly the moſt conſiderable in that country; but it has been diſmantled by the Dutch. E. Long. 3. 30. N. Lat. 51. 16.

ARDENNE, a foreſt in France, formerly of vaſt extent; but the trees are in many places grubbed up, and where they ſtood are built cities, towns and abbeys. At preſent it extends from Thionville, near the country of Liege, to Donchery and Sedan, on the confines of Champagne. The roads are ſo narrow in ſome places, that two waggons cannot paſs each other; and therefore the waggoners are obliged to provide themſelves with bells or horns to give one another notice to ſtop in time.

ARDENNES, a department of France, which comprehends part of Champagne, and takes its name from the foreſt.

ARDENTES, in middle-age writers, an appellation given to thoſe afflicted with the ignis ſacer, or eryſipelas. They were thus called, as ſeeming to be ſcorched or burned with the diſeaſe. Hence alſo the abbey of St Genevieve at Paris is called *Domus Ardentium*, by reaſon, as it is ſaid, that great numbers were cured of that diſtemper at the ſhrine of this ſaint, in the reign of Lewis VI.

ARDES, a town of France, in Lower Auvergne, and the principal place of the duchy of Mercœur. It ſerves as a mart for the commodities and trade between Upper and Lower Auvergne. E. Long. 3. 10. N. Lat. 45. 22.

ARDFERT, a town of Ireland, was the ancient capital of Kerry, with an univerſity, which was held in the higheſt eſteem. It is a biſhop's ſee, and borough by ancient preſcription, and has been held *in commendam* with the biſhopric of Limerick ever ſince the Reſtoration. The biſhops were anciently called Biſhops of Kerry. St Brandon, to whom the cathedral is dedicated, had his firſt education in this county, under Biſhop Ert; but he finiſhed his ſtudies in Connaught, St Jarlath biſhop of Tuam being his preceptor. The ruins here are very extenſive. Near the cathedral was an anchorite tower, the loftieſt and fineſt in the kingdom, being 120 feet high: it fell ſuddenly in 1771. In the ruined churches there are ſeveral inſcriptions round the mouldings of the tomb ſtones; and over an arch, behind Lord Glandore's houſe, is an inſcription in relief done in a maſterly manner, but the characters unknown.

ARDRAH, a ſmall territory or kingdom of Africa, in Guinea, properly ſo called. It lies at the bottom of the gulf of St Thomas, and has a town called *Ardres*, ſuppoſed to be the capital. The inhabitants are very licentious, and have neither temple nor any place for religious worſhip. However they are very courageous; and their king was abſolute, till lately that the king of Dahomy made war upon this and the neighbouring territories, brought them under ſubjection, and burnt the towns, particularly Ardres. The air is very unwholeſome to Europeans: yet the natives live to a great age; but the ſmallpox makes great deſtruction among them. This country is fertile in Indian corn, palm wine, plants, and fruits, which laſt all the year; and they make a great deal of ſalt.

Ardres || Arelate.

ARDRES, a town of France, in Lower Picardy, now the department of the Straits of Calais. Here was an interview between Francis I. and Henry VIII. king of England in 1520. It is ſeated in the midſt of a moraſs eight miles ſouth of Calais. E. Long. 2. 0. N. Lat. 50. 35.

ARDS, Barony of, in the county of Down in Ireland: it is a narrow ſlip of land, in ſome places three and in none above ſix miles broad; but the ſoil is for the moſt part tolerably good. It lies between the lake of Strangford and the ſea, and in the ſouth part it is oppoſite to Lecale. Sir Thomas Smith obtained a patent for this barony from Queen Elizabeth, and ſent his natural ſon with a colony to poſſeſs it; but he was intercepted and ſlain by an Iriſhman. After Sir Thomas's death, Ards was granted by James I. to ſome of the Scots nobility.

ARDUBA, an ancient city of the Pannonians. It was taken by Germanicus about the 7th year of the Chriſtian æra; but its reduction was more owing to the diſagreement that reigned among the inhabitants than to the valour of the Romans. The greater part of the citizens were for ſubmitting; but the women more fond of their ancient laws and liberties than the men, joined ſome Roman deſerters, and falling upon their huſbands, killed a great number of them: but being at laſt overcome by the men, who then ſubmitted to the Romans, the women either threw themſelves headlong from the tops of the walls, or, ſetting fire to their houſes, burnt themſelves and their children to death.

AREA, in general, denotes any plain ſurface, whereon we walk, &c. The word is Latin, importing more properly a thraſhing floor; and is derived from *arere* "to be dry."

Area, in *Architecture*, denotes the ſpace or ſite of ground on which an edifice ſtands. It is alſo uſed for inner courts and thoſe portions of ground.

Area, in *Geometry*, denotes the ſuperficial content of any figure. Thus, if a figure, e. g. a field, be in form of a ſquare, and its ſide be 40 feet long, its area is ſaid to be 1600 ſquare feet; or it contains 1600 little ſquares, each a foot every way.

AREB, a kind of imaginary money uſed in the dominions of the Great Mogul. Four arebs are equal to one crou, or 100 lacs; one lac to 100,000 roupees.

AREBO, or Arebon, a town on the Slave coaſt of Guinea, in Africa, ſeated at the mouth of the river Formoſa. The Engliſh had once a factory there, as the Dutch have ſtill. It is a large oblong place, indifferently well peopled, and furniſhed with houſes built of reeds and leaves. E. Long. 5. 5. N. Lat. 5. 0.

ARECA, the Fausel-nut. See Botany *Index*.

ARELATE, or Arelatum, is a town of Gallia Narbonenſis, ſituated on the Rhone, denoting a town on, or beyond, a marſh, according to the particular ſituation

Aremberg || Areopagus.

ſituation of the ſpeaker; called *Arelate Sextanorum*, (Pliny, Mela, Coin), becauſe it had a colony of the ſixth legion. Writers of the lower age call it *Arelas, -atis*, (Prudentius, Auſonius). There was a double Arelas, one on each ſide of the river, and joined by a bridge, (Auſonius); that on the left ſide is thought to have been built by Conſtantine. Tiberius's father was ſent by Julius Cæſar at the head of the colony, (Suetonius); and hence the appellation *Julia Paterna*, as appears from an inſcription. It was a favourite place of the Romans, and greatly ornamented; and hence called *Gallula Roma*, (Auſonius). It is now called *Arles*. E. Long. 5. 5. N. Lat. 43. 40.

AREMBERG, a ſmall town of Germany, in the circle of Weſtphalia, defended by a caſtle. It is the capital of a county of the ſame name, and was erected into a principality by the emperor Maximilian II. in favour of John de Ligne, lord of Barbazon, who took the name of *Aremberg*. It is ſeated on the river Aer. E. Long. 7. 3. N. Lat. 50. 27.

AREMORICA, or ARMORICA, a part of Gaul between the Sequana and Ligeris, (Cæſar, Hirtius); denoting a country on, or beyond the ſea, *ar moer*, or *are moer*, Celtic. Pliny indeed ſays, that *Aquitania* was formerly called *Aremorica*; but in this he ſtands alone. In the lower age, the term *Armorica* was confined to Bretagne in France.

ARENA, in *Roman Antiquity*, a place where the gladiators fought; ſo called from its being always ſtrewed with ſand, to conceal from the view of the people the blood ſpilt in the combat. Nero is ſaid to have ſtrewed the arena with gold duſt.

ARENARIA, or SANDWORT. See BOTANY *Index*.

ARENACUM, or ARENACUS, one of the four towns or larger villages in the iſland of the Batavi, (Tacitus). Now *Arnheim*, in Guelderland. E. Long. 5. 20. N. Lat. 52. 2.

ARENARII, in *Antiquity*, gladiators who combated with beaſts in the arena or amphitheatre. The arenarii were ſlaves of the loweſt rank; ſo that, though manumitted, they were not capable of being Roman citizens. They were the ſame with what were otherwiſe called *Beſtiarii*.

ARENARIUM, in *Eccleſiaſtical Writers*, denotes a cemetery or burying ground. The arenaria were properly a kind of pits, or holes, under ground, wherein the ancient Chriſtians not only buried their dead, but held their religious aſſemblies in times of perſecution.

ARENSBERG, a ſmall town of Germany, in the circle of Weſtphalia, upon the river Roer. E. Long. 8. 20. N. Lat. 51. 25.

ARENSBURG, an epiſcopal and maritime town of Livonia in Sweden, ſeated in the iſle of Oſel, in the Baltic ſea. E. Long. 22. 40. N. Lat. 58. 15.

AREOLA, among *Anatomiſts*, the coloured circle ſurrounding the nipple of the breaſt.

AREOPAGUS, a ſovereign tribunal at Athens, famous for the juſtice and impartiality of its decrees, to which the gods themſelves are ſaid to have ſubmitted their differences. It was in the town, on a rock or hill oppoſite to the citadel. The word ſignifies ſtrictly, *rock of Mars*.

Plutarch attributes the eſtabliſhment of the Areopagus to Solon. Other authors think differently: and with good reaſon; for it appears undeniable, that this tribunal was inſtituted before Solon. But the beſt authorities allow him the honour of its reſtoration. The city of Athens, governed for a long time by tribunals of a circumſcribed juriſdiction, which were multiplied by the moſt trifling accidents and circumſtances, took no fixed political or civil form, however ſlightly united the members of thoſe tribunals were by their general views towards the public good, and by the common love of their country. As each of thoſe tribunals could only act in proportion to the power delegated to it, it was impoſſible that ſo many different and unequal impreſſions ſhould give to the great machine of the ſtate that uniform and regular movement which, by an impulſe always the ſame, would keep each part in the ſituation it ſhould maintain with relation to the whole. Areopagus.

To effect this univerſal and harmonious power, it was neceſſary to unite the different channels of public authority, which, by being too much diſtributed, loſt its force. This authority Solon collected, and placed it all in the court of Areopagus, wich conſequently became the main ſpring of the government. The judges of this court, who, under Draco, decided only in caſes of murder, now took cognizance of crimes of every kind: and the ſame tribunal which inflicted capital puniſhment on murder, poiſoning, burning of houſes, theft, &c. ſtruck at the roots of thoſe crimes, by arraigning idleneſs, luxury, and debauchery. Equally attentive to ſtimulate the indolence of the young, and the languor of the old, theſe ſage judges roufed in the one the laudable ambition to ſerve the ſtate, and reſtored to the others their former activity. Satisfied that extremes produce the ſame effects, they thought the republic had as much to fear from the exceſs of wealth as from the gripe of poverty. Hence they exacted a minute account of the effects of every individual. Hence their great ſeverity to thoſe idle citizens, who, inſtead of being uſeful members in a ſtate, are its bane and its diſhonour. Iſocrates draws a moſt beautiful and ſtriking picture of thoſe venerable and aſtoniſhing men, and of the order and harmony which flouriſhed in Athens by their wiſe adminiſtration.

The judges of the Areopagus, ſays that author, were more induſtrious to prevent crimes, by repreſenting them in an odious light, than to eſtabliſh modes of puniſhment. It was their opinion, that the enemies of the ſtate were the inſtruments deſtined by the gods to puniſh the wicked; but that it was their province to correct and reform public and private manners. They were vigilantly attentive to the conduct of all the citizens, but particularly to that of the youth. They well knew that the impetuoſity of juvenile paſſion gave the moſt violent ſhocks to health and growing virtue; that it was the duty of inſpectors of education to ſoften the auſterity of moral diſcipline with innocent pleaſure; and that no recreations were more eligible than bodily exerciſes, which enable a young man to give a good education its full play, which improve health, give a pleaſureable and agreeable vivacity, and even fortify the mind. The fortunes of the Athenians were too unequal to admit the ſame mode of education; and therefore the youth were trained in a manner ſuitable to the rank and circumſtances of their reſpective fami-

lies

Areopagus. lies. Thoſe of the inferior claſſes were taught agriculture and commerce; from this principle, that idleneſs is followed by indigence, and that indigence excites to the moſt daring and atrocious crimes. Having thus endeavoured, by wiſe precautions, to preclude the entrance of moral evil, they thought they had little to fear.

Exerciſes of the body, ſuch as horſemanſhip and hunting, were objects of education to the youth of liberal fortune. In this ſage diſtribution, their great aim was to prevent the poor from committing crimes, and to facilitate to the rich the acquiſition of virtue. Not ſatisfied with having eſtabliſhed good laws, they were extremely careful to ſee that they were obſerved. With this view they had divided the city into quarters, and the country into cantons. Thus every thing paſſed under their eyes; nothing eſcaped them; they were acquainted with the private conduct of every citizen. Thoſe who had been guilty of any irregularity were cited before the magiſtrates, and were reprehended, or puniſhed in proportion to their miſdemeanour.

The ſame Areopagites obliged the rich to relieve the poor. They repreſſed the intemperance of the youth by a ſevere diſcipline. Corruption in magiſtrates was ſuppreſſed by the puniſhments denounced againſt it; and the old men, at the ſight of the employments of the young, felt themſelves animated with a degree of juvenile vigour and activity.

Religion came likewiſe under the cognizance of the Areopagites. Plato durſt never, we are told by Juſtin Martyr, divulge his private opinion concerning the Deity. He had learned from the Egyptians the doctrine of Moſes. It appeared to him the beſt, and he embraced it with ardour. But his dread of the Areopagites, who were attached to the prevailing ſyſtem, would not permit him even to name the author of ſentiments which oppoſed the common tradition.

The public edifices, the cleanneſs of the ſtreets, the pay of the ſoldiers, the diſtribution of the public money; in a word, whatever intereſted the republic, was under the direction of the Areopagus. The people themſelves, jealous as they were of their power, did nothing without conſulting this aſſembly, and ſuffered it without a murmur, to amend their precipitate decrees. Yet this authority, however great it may ſeem, was ſubject to the laws; by them rewards and puniſhments were determined; and thoſe reſpectable judges gave an account of the exerciſe of their truſt to public cenſors, who were placed betwixt them and the people to prevent the ariſtocracy from growing too powerful.

The moſt important qualifications were required in thoſe who entered into the Areopagus. Solon made a law, by which they who had not been archons for a year ſhould not be admitted members of the Areopagus. To give more force to his law, he ſubjected himſelf to it, and was only admitted on that title. This was but the firſt ſtep; thoſe annual magiſtrates, after having given law to the republic, were interrogated on their adminiſtration. If their conduct was found irreproachable, they were admitted Areopagites with eulogium; but the ſmalleſt miſconduct excluded them from that honour for ever. What adminiſtration was not to be expected from a tribunal ſo well compoſed! what veneration was not due to men of ſuch rare talents and virtue! Such reſpect was paid them, that people preſumed not to laugh in their preſence; and ſo well eſtabliſhed was their reputation for equity, that thoſe whom they condemned, or diſmiſſed without granting their petition, never complained that they had been unjuſtly treated. Areopagus.

The edifice of the Areopagus was extremely ſimple; and its roof, which was at firſt of the moſt common materials, remained in that ſtate till the time of Auguſtus. This we learn from Vitruvius. Oreſtes was the firſt who thought of embelliſhing it. He raiſed in it an altar to Minerva. He likewiſe adorned it with two ſeats of ſolid ſilver; on one of which the *accuſer* ſat, and the *accuſed* on the other. The one ſeat was conſecrated to *Injury*, and the other to *Impudence*. This religious ſketch was brought to perfection by Epimenides, who erected altars to thoſe allegorical deities, and ſoon after a temple, which Cicero mentions in his ſecond book of laws. This temple correſponded with that which Oreſtes had built to the Furies, who brought him to Athens, and procured him the protection of Minerva. Epimenides dedicated it a ſecond time to the Furies, or *ſevere Goddeſſes*, as they were termed by the Athenians. A man was thought loſt without reſource, and a victim to every human ill, if he enforced a perjury by invoking the ſacred name of thoſe tremendous divinities.

Thoſe who employed their thoughts in ſolving the myſteries of Paganiſm, imagined that the Eumenides had their temple ſo near the court of Areopagus, that they might enlighten the judges by their inſpiration, and, by their continual aſſiſtance, prevent them from committing thoſe errors to which human weakneſs is liable. To propitiate thoſe terrible deities, and to procure their favour for the Areopagus, they were worſhipped with great punctuality and devotion; and the ſenate itſelf appointed their prieſts. Demoſthenes had been nominated to preſide over their ſacrifices; and he thought it very extraordinary, that he, to whom the republic had confided ſo important an office, ſhould be publicly impeached.

It was natural to aſſociate with the Eumenides the other deities who ſhared with them the ſovereign empire over the dead. Epimenides placed in their temples the ſtatues of Pluto, of Mercury, and of Tellus. They were all, according to Pauſanias, of an agreeable form. Each of them was placed upon an altar, on which the citizens, or ſtrangers, who had been acquitted by the Areopagus, made their grateful offerings. But it was not to gratitude alone that theſe ſeveral deities owed all the incenſe that ſmoked upon their altars. They who had been accuſed before the ſenate, haraſſed with ſuperſtition, and uncertain how theſe deities would be affected towards them, were laviſh of ſacrifices to obtain their clemency, by which they hoped their judges would likewiſe be influenced.

The tomb of Oedipus was another of the ornaments of the Areopagus. It was in the outward court of the Areopagus, where a barge was likewiſe placed, which made a part of the pomp at the public games.

Whatever homage and implicit obedience the court of Areopagus might derive from all this religious parade, the public good was always dearer to them than

Areopagus. than any lower advantages they might have drawn from the altars and temples with which they were furrounded.

The ſenate aſſembled in a hall built on the ſummit of a hill, which was aſcended with difficulty by the old men bent with age. However, as for ſome time they only aſſembled on the three laſt days of each month, they bore with patience this inconvenient ſituation. But public affairs multiplied to ſuch a degree, that they were obliged to add to the three former ſittings a fourth, which was held on the ſeventh day of the month, and which was ſoon ſucceeded by an aſſembly every day. Their meetings were ſo regular, that they were not interrupted by the moſt ſolemn feſtivals, till Cephiſodorus was archon, who, in the third year of the 105th Olympiad, made a decree, which obliged the Areopagites to celebrate, after the example of the other courts, the Apaturian feaſts, which laſted five days.

This aſſiduous and painful exerciſe of their office made the Areopagites feel the inconvenience of the ſituation of their tribunal, and determined them to remove it to a part of the city called the *Royal Portico*. It was a ſquare, expoſed to all the inclemencies of the weather. When the judges, who aſſembled there in profound ſilence, had taken their places, they were encloſed by a thread, or rather a cord, drawn around them.

They held their aſſemblies in the night, that their attention to public affairs might not be diverted by external objects,—and (adds Lucian) that they might only be influenced by the arguments, and not by the preſence and action, of the ſpeakers. This circumſtance explains a paſſage in Athenæus, who tells us, that none knew the number nor faces of the Areopagites. The cuſtom of adminiſtering juſtice in the open air was not peculiar to them. It was followed by all the other tribunals when they tried for murder: for two reaſons:—1ſt, That the judges, the ſworn protectors of innocence, might not be hurt by being under cover with criminals, whoſe hands were polluted with blood. 2dly, That the accuſer and the accuſed might not be under the ſame roof.

When all the members of the ſenate were convened, a herald enjoined ſilence, and ordered the people to retire. As ſoon as they had departed, the aſſembly proceeded to buſineſs; and as they deemed the leaſt preference a flagrant injuſtice, the cauſes which they were to determine were drawn by a kind of lottery; and the ſame chance which brought them up, diſtributed them to different numbers of judges, ſmall or great, according to the importance of the ſeveral cauſes.

In early times, the parties themſelves ſtated their cauſe in a ſimple manner. The eloquence of advocates was thought a dangerous talent, fit only to varniſh crimes. But afterwards the Areopagus, on this point, relaxed from their ſeverity; at firſt the accuſed and ſoon after the accuſers, were permitted to engage thoſe to make the attack and the defence, whoſe profeſſion it was to exert the art of ſpeaking for others, with accuracy and elegance.

Sextus Empiricus ſeems not to have ſufficiently diſtinguiſhed times, where he ſays, that the court of Areopagus did not ſuffer thoſe who are to be tried at their bar to avail themſelves of the abilities of others. Areopagus.

What undoubtedly led him into that miſtake, was an inviolable cuſtom of that tribunal, which prohibited, in pleadings, all that warm and picturеſque oratory which ſeduces the judgment and inflames the paſſions. When the ſuffrages were collected, each perſon gave his in ſilence. They voted with a ſmall flint, which they held betwixt the thumb and the two next fingers, and which they put into one of the two urns that ſtood in a corner of the hall. One ſtood before the other. The firſt was called the *urn of death*; the ſecond, the *urn of compaſſion*. That of death was of braſs, and was termed *proper*; that of compaſſion was of wood, and was termed *improper*. The judges commonly brought their flint to the aſſembly, and put it into the urn; but, that all the ſuffrages might be collected, the herald took the two urns, and preſented them, one after another, to every ſenator, commanding him, in the name of the republic, no longer to defer his acquittal or condemnation.

From this method of giving ſentence, which was called κρυβδην ψηφος, becauſe it kept the vote of each perſon undiſcovered, the Thirty Tyrants, to make themſelves maſters of the deciſions of the Areopagus, ſubſtituted another, by means of which they knew exactly the opinion of each of the judges; for they obliged them to bring their flints publicly, and lay them upon two tables placed before them, the ſituation of which was quite oppoſite to that of the urns; for the firſt of thoſe tables was that of *life*, and the ſecond that of *death*.

The firſt ſubſtances with which they gave their ſuffrages were not ſmall pieces of the bones of a hog, as ſome authors aſſert, but ſea-ſhells, for which pieces of braſs, of the ſame form, termed *ſpondyla*, were afterwards ſubſtituted. The ſubſtances with which they voted were diſtinguiſhed by their form and colour. Thoſe which condemned were black, and perforated in the middle; the others were white, and not perforated. The precaution of piercing the black ones tend to prove, what we have already obſerved, that the court of Areopagus ſat in the night: for what end did it ſerve to pierce the black ſhells, or flints, if the judges could have ſeen them and the white ones, and conſequently have diſtinguiſhed their colours by the aſſiſtance of the light? But as they paſſed ſentence in the dark, it is evident that a difference beſides that of colour was neceſſary, to know the black ones from the white. The judges were likewiſe permitted to multiply at pleaſure, the diſtinctions between ſigns, which eſſentially diſtinguiſhed the fates of men.

After the ſuffrages were collected, they were taken out of the two urns, and put into a third vaſe of braſs. They were then counted; and as the number of white or of black flints, was higher or inferior, one of the judges drew with his nail a ſhorter or a longer line on a tablet with a waxen ſurface, on which the reſult of each cauſe was marked. The ſhort line expreſſed acquittal; the long, condemnation.

With regard to the emoluments of the judges, they were as moderate as thoſe of the advocates. The length of the proceſs did not enhance its expence; and when the deciſion of a cauſe was poſtponed till the next day, the committee were only paid an obolus on that day. Hence Mercury, in Lucian, is ſurpriſed that ſuch

ſenſible

Areopagus. ſenſible old men as the ſenators of Areopagus were ſhould ſell at ſo low a price the trouble of aſcending ſo high.

As to the number of the judges which compoſed the Areopagus, ſome authors, attentive only to a part of Solon's regulations, by which he enacted, that for the future, none but the nine archons ſhould be admitted members of the Areopagus, have imagined, that this tribunal was filled anew every year, and that it never conſiſted of more than nine magiſtrates. This opinion, and ſome others, are refuted by the circumſtantial account which Diogenes Laertius gives us of the condemnation of Socrates. This great man had wiſhed to ſubſtitute a rational hypotheſis for the fabulous and extravagant ſyſtem of religion which prevailed in his time. His project, however laudable, appeared impious in the eye of ſuperſtition. Information was laid againſt him before the Areopagus, and he had as many accuſers as fellow citizens. After the charges and the anſwers were heard, they proceeded to ſuffrages. The opinions were divided, but not equally, for the number of thoſe who condemned him exceeded by 281 the number of thoſe who declared him innocent. He made an ironical reply to this iniquitous ſentence, by telling his judges, that he took it for granted, they would admit him to a maintenance in the Prytaneum. On this ſarcaſm, 80 of thoſe who had voted in his favour forſook him, went over to the oppoſite party, and condemned him to die. Here then we have 361 judges who condemn; to whom if we add thoſe who perſiſt in acquitting him, the number muſt be very conſiderable.

Of all the judgments of the Areopagus, the moſt famous one, excepting that of Mars, was the ſentence which they paſſed on Oreſtes. His trial, which happened under Demophoon the 12th king of Athens, in 375 of the Attic era, owed all its fame to a remarkable circumſtance, that gave riſe to a cuſtom which was obſerved ever afterwards. Oreſtes had killed his mother. He was accuſed before the Areopagus, and cited to appear in that court. He would have loſt his life in conſequence of the equal diviſion of the votes, had not Minerva, moved with his misfortunes, declared herſelf for thoſe who had abſolved him, and joined her ſuffrage to theirs. Thus Oreſtes was ſaved. In veneration to this miracle, the Areopagites, whenever the ſuffrages were equally divided, decided in favour of the accuſed, by granting him what they termed *the ſhell of Minerva*. Cephalus and Dædalus were condemned by the Areopagus long before the time of Oreſtes.

We find in ancient authors ſome deciſions of this tribunal, which bear the ſtrongeſt marks of juſtice, though their objects are not intereſting. We ſhall here quote an anecdote from Aulus Gellius, and Valerius Maximus, of a woman, who was accuſed of having poiſoned her huſband and her ſon. She was taken and brought before Dolabella, who was then proconſul of Aſia. She was no ſooner in his preſence than ſhe owned the fact; and added, that ſhe had very good reaſons for putting her huſband and her ſon to death.—"I had (ſaid ſhe) to my firſt huſband a ſon whom I tenderly loved, and whoſe virtues rendered him worthy of my affection. My ſecond huſband, and the ſon whom I bare to him, murdered my favourite child. I thought it would have been unjuſt to Areopagus, Arequiba. have ſuffered thoſe two monſters of barbarity to live. If you think, Sir, that I have committed a crime, it is your province to puniſh it: I certainly ſhall never repent of it." This affair embarraſſed Dolabella. She was afterwards ſent to the Areopagus; and that court, when they had examined her a long time, ordered her and her accuſer to appear before them again a hundred years after, from the firſt day of her trial.

We muſt not, however, ſuppoſe that the Areopagus always preſerved its old reputation; for ſuch is the conſtitution of human affairs, that perfection, with regard to them, is a violent, and conſequently a tranſitory, ſtate. Pericles, who lived about 100 years after Solon, to flatter the people and win them to his party, uſed his utmoſt efforts to weaken the authority of the Areopagus, which was then diſliked by the multitude. He took from it the cognizance of many affairs which had before come under its juriſdiction; and to forward his deſign of humbling it, employed the eloquence of Ephialtes, whoſe talents were formidable, and who was an avowed enemy to the great men of Athens.

The Areopagus itſelf ſeemed to ſecond the endeavours of a man who projected its ruin, and by its miſconduct haſtened its fall. The old rules of the court, by which none were admitted its members but thoſe whoſe unexceptionable conduct would ſupport its majeſty, ſeemed too ſevere. They grew leſs delicate in their choice; and preſuming that the faults with which they diſpenſed, would ſoon be reformed in the ſociety of ſo many good examples, vice imperceptibly crept among them: corruption, at firſt ſecret and timid, grew inſenſibly open and daring, and made ſuch progreſs, that the moſt ſhameful crimes were ſoon exhibited on the ſtage; and they were not copied from the low and abandoned multitude, but from thoſe ſenators, once the venerable and auſtere cenſors of idleneſs and of vice. Demetrius, the comic poet, wrote a piece which he entitled *The Areopagitæ*, where he ſtrips the maſk off thoſe hypocritical legiſlators, who were now equally apt to be ſeduced by wealth and by beauty. So much had the Athenian ſenate degenerated in the days of Iſocrates, cir. 340 years before the Chriſtian era.

Before this tribunal St Paul was called to give an account of his doctrine, and converted Dionyſius one of their number.

The end of this court of judicature is as obſcure as its origin, which was derived from very remote antiquity. It exiſted, with the other magiſtracies, in the time of Pauſanias, i. e. in the 2d century. The term of its ſubſequent duration is not aſcertained, but a writer, who lived under the emperors Theodoſius the Elder and Younger, in the 5th century, mentions it as extinct.

AREQUIBA, a city of Peru in South America, ſituated in W. Long. 73°. S. Lat. 17°. It is one of the moſt beautiful cities in all Peru, being delightfully ſituated in the valley of Quilca, 100 leagues from Lima, and 20 from the ſea, with which it communicates by a fine river. The entrance into the harbour is rather ſhallow for ſhips of great burden; but when once they are entered, they may ride ſecurely in 18 fathoms water. This city was founded in 1539, by order of Don Franciſco Pizarro, in a place known likewiſe by the name of *Arequiba*; but its ſituation being found diſadvantageous,

Ares
||
Arethuſa.

diſadvantageous, the inhabitants obtained leave to remove to the place where the city now ſtands. The houſes are built with ſtone, and vaulted; and, contrary to what is uſual in warm countries, they are lofty, neatly furniſhed within, and finely decorated on the outſide. The inhabitants alſo are exempt from many diſeaſes common in other parts of Peru; which perhaps is owing to their keeping the ſtreets clean by means of canals which extend to the river. The temperature of the air is extremely good; and though ſometimes a ſlight froſt is perceivable, the cold is never exceſſive, nor the heat troubleſome, ſo that the ſurrounding fields are clothed with perpetual verdure. Theſe natural advantages, however, are conſiderably allayed by its being very ſubject to earthquakes, by which it has already been five times laid in ruins; notwithſtanding which, it is populous, and has among its inhabitants ſome of the nobleſt families in America.

ARES, a word of Paracelſus's, by which he would expreſs that power of nature in the whole material world, by which ſubjects are divided into individuals.

ARETÆUS of Cappadocia, a Greek phyſician of this ſect of the Pneumatiſts, lived in the reign of Auguſtus, according to ſome; according to others, under Trajan or Adrian. He wrote ſeveral treatiſes in the Ionian dialect, on acute diſeaſes, and other medicinal ſubjects; ſome of which are ſtill extant. The beſt edition of his works is that of Boerhaave, in Greek and Latin, with notes, printed in 1731: that of Wigan, printed at Oxford in 1723, in folio, is alſo much eſteemed.

ARETHUSA, in fabulous hiſtory, the daughter of Nereus and Doris, and the companion of Diana, who changed her into a fountain to deliver her from the purſuit of her lover Alpheus.

ARETHUSA, a celebrated fountain near the city of Syracuſe in Sicily, famous for the quantity of its waters, and the number of fiſhes it contained. Many fables were invented by the ancients concerning this fountain. They had alſo a notion that the river ALPHEUS ran under or through the waters of the ſea, without mixing with them, from Peloponneſus to Sicily. Mr Brydone informs us, that it ſtill continues to ſend forth an immenſe quantity of water, riſing at once to the ſize of a river, but is entirely abandoned by the fiſhes it formerly contained in ſuch plenty. At ſome diſtance from Arethuſa is a fountain of freſh water which boils up very ſtrongly in the ſea, inſomuch that, after piercing the ſalt water, it may be ſometimes taken up very little affected by it. This fountain Mr Brydone thinks the ancients were ignorant of, or they would not have failed to uſe it as an argument for the ſubmarine journey of the Alpheus.

Mr Swinburne deſcribes this once famous fountain as a large pool of water near the quay, defended from the ſea by a wall, and almoſt hidden by houſes on every other ſide. The water is not ſalt, but brackiſh, and fit for no purpoſe but waſhing linen. "This (ſays he) is the celebrated fountain of Arethuſa, whoſe ſoft poetical name is known to every reader. The fable of the nymph and her conſtant lover Alpheus, the excellency of the ſpring, and the charms of its ſituation, are themes on which ancient and modern poets have indulged their fancy, and exerciſed their pens. Alas, how altered! rubbiſh chokes up its wholeſome ſources; the waves have found a paſſage through the rocks, which repeated earthquakes have ſplit; and only a rill is to be ſeen in it. Sometimes, after an earthquake, it has been quite dry; and, at other times, the whole ſtream of its waters has been tainted by ſubterraneous eruptions. Its fountain-head probably lies among the ſubterranean hills."

ARETHUSA. See BUTANY *Index*.

ARETIA. See BUTANY *Index*.

ARETIN, GUIDO, famous for his muſical improvements, lived in the 13th century. He was a native of Arezzo, a city in Tuſcany; and having been taught the practice of muſic in his youth, and probably retained as a choriſter in the ſervice of the Benedictine monaſtery founded in that city, he became a monk profeſſed, and a brother of the order of St Benedict.

In this retirement he ſeems to have devoted himſelf to the ſtudy of muſic, particularly the ſyſtem of the ancients, and, above all, to reform their method of notation. The difficulties that attended the inſtruction of youth in the church offices were ſo great, that, as he himſelf ſays, ten years were generally conſumed barely in acquiring the knowledge of the plain ſong; and this conſideration induced him to labour after ſome amendment, ſome method that might facilitate inſtruction, and enable thoſe employed in the choral office to perform the duties of it in a correct and decent manner. If we may credit thoſe legendary accounts that are extant in old monkiſh manuſcripts, we ſhould believe he was aſſiſted in his pious intention by immediate communications from heaven: ſome ſpeak of the invention of the ſyllables as the effect of inſpiration; and Guido himſelf ſeems to have been of the ſame opinion, by his ſaying it was revealed to him by the Lord; or, as ſome interpret his words, in a dream: but graver hiſtorians ſay, that being at veſpers in the chapel of his monaſtery, it happened that one of the offices appointed for that day was the hymn * to St John.

UT queant laxis	*REſonare fibris*
MIra geſtorum	*FAmuli tuorum*
SOLve polluti	*LAbiis reatum,*
	Sancte Joannes.

During the performance of the hymn, he remarked the iteration of the words, and the frequent returns of UT, RE, MI, FA SOL, LA: he obſerved likewiſe a diſſimilarity between the cloſeneſs of the ſyllable MI and the broad open ſound of FA, which he thought could not fail to impreſs upon the mind a laſting idea of their congruity; and immediately conceived a thought of applying theſe ſix ſyllables to perfect an improvement either then actually made by him, or under conſideration, viz. that of converting the ancient tetrachords into hexachords.

Struck with the diſcovery, he retired to his ſtudy, and having perfected his ſyſtem, began to introduce it into practice; the perſons to whom he communicated it were the brethren of his own monaſtery, from whom it met with but a cold reception, which in the epiſtle to his friend, he aſcribes undoubtedly to its true cauſe, envy: however, his intereſt with the abbot, and his employment in the chapel, gave him an opportunity of trying the efficacy of his method on the boys who were training up for the choral ſervice, and it exceeded the moſt ſanguine expectation. "To the admiration of all (ſays Cardinal Baronius) a boy there-

Aretin. by learnt, in a few months, what no man, though of great ingenuity, could before that attain in ſeveral years."

The fame of Guido's invention ſoon ſpread abroad, and his method of inſtruction was adopted by the clergy of other countries. We are told by Kircher, that Hermannus, biſhop of Hamburgh, and Elviricus biſhop of Oſnaburg, made uſe of it; and by the authors of the *Hiſtoire Litteraire de la France*, that it was received in that country, and taught in all the monaſteries in the kingdom. It is certain that the reputation of his great ſkill in muſic had excited in the pope a deſire to ſee and converſe with him; of which, and of his going to Rome for that purpoſe, and the reception he met with from the pontiff, he himſelf has given a circumſtantial account in the epiſtle hereafter mentioned.

The particulars of this relation are very curious; and as we have his own authority, there is no room to doubt the truth of it. It ſeems that John XX. or as ſome writers compute, the 19th pope of that name, having heard of the fame of Guido's ſchool, and conceiving a deſire to ſee him, ſent three meſſengers to invite him to Rome; upon their arrival, it was reſolved by the brethren of the monaſtery, that he ſhould go thither attended by Grimaldo the abbot, and Peter the chief of the canons of the church of Arezzo. Arriving at Rome, he was preſented to the holy father, and by him received with great kindneſs. The pope had ſeveral converſations with him, in all which he interrogated him as to his knowledge in muſic; and upon ſight of an antiphonary which Guido had brought with him, marked with the ſyllables agreeable to his new invention, the pope looked on it as a kind of prodigy; and ruminating on the doctrines delivered by Guido, would not ſtir from his ſeat till he had learned perfectly to ſing off a verſe: upon which he declared that he could not have believed the efficacy of the method, if he had not been convinced by the experiment he had himſelf made of it. The pope would have detained him at Rome; but labouring under a bodily diſorder, and fearing an injury to his health from the air of the place, and the heats of the ſummer, which was then approaching, Guido left that city upon a promiſe to reviſit it, and explain to his holineſs the principles of his new ſyſtem. On his return homewards, he made a viſit to the abbot of Pompoſa, a town in the duchy of Ferrara, who was very earneſt to have Guido ſettle in the monaſtery of that place; to which invitation it ſeems he yielded, being, as he ſays, deſirous of rendering ſo great a monaſtery ſtill more famous by his ſtudies there.

Here it was that he compoſed a tract on muſic, entitled *Micrologus*, i. e. "a ſhort diſcourſe;" which he dedicated to Theobald biſhop of Arezzo; and finiſhed, as he himſelf at the end of it tells us, under the pontificate of John XX. and in the 34th year of his age. Voſſius ſpeaks alſo of another muſical treatiſe written by him, and dedicated to the ſame perſon.

Moſt of the authors who have taken occaſion to mention Guido, ſpeak of the Micrologus as containing the ſum of his doctrine: but it is in a ſmall tract, entitled *Argumentum novi Cantus inveniendi*, that his declaration of his uſe of the ſyllables, with their ſeveral mutations, and in ſhort his whole doctrine of ſolmiſation, is to be found. This tract makes part of an epiſtle to a very dear and intimate friend of Guido, Aretin. whom he addreſſes thus, "Beatiſſimo atque dulciſſimo fratri Michaeli;" at whoſe requeſt the tract itſelf ſeems to have been compoſed.

Whether Guido was the author of any other tracts, is not eaſy to determine. It nowhere appears that any of his works were ever printed, except that Baronius, in his *Annales Eccleſiaſtici*, tom. xi. p. 73. has given at length the epiſtle from him to his friend Michael of Pompoſa, and that to Theobald biſhop of Arezzo, prefixed to the Micrologus: and yet the writers on muſic ſpeak of the Micrologus as of a book in the hands of every one. Martini cites ſeveral manuſcripts of Guido; namely, two in the Ambroſian library at Milan, the one written about the twelfth century, the other leſs ancient; another among the archives of the chapter of Piſtoja, a city in Tuſcany; and a third in the Medico-Laurenziano library at Florence, of the 15th century: theſe are clearly the Micrologus. Of the epiſtle to Michael of Pompoſa, together with the *Argumentum novi Cantus inveniendi*, he mentions only one, which he ſays is ſomewhere at Ratiſbon. Of the ſeveral tracts above mentioned, the laſt excepted, a manuſcript is extant in the library of Baliol-college in Oxford. Several fragments of the two firſt, in one volume, are alſo among the Harleian manuſcripts now in the Britiſh Muſeum, N° 3199; but ſo very much mutilated, that they afford but ſmall ſatisfaction to a curious inquirer.

ARETIN, *Leonard*, one of the moſt learned men of the 15th century, was ſecretary to the republic of Florence, and tranſlated from the Greek into Latin ſome of the Lives of Plutarch, and Ariſtotle's Ethics: he alſo compoſed three books of the Punic war, that may ſerve as a ſupplement to thoſe wanting in Livy; the hiſtory of the tranſactions in Italy during his time; that of ancient Greece; that of the Goths; that of the republic of Florence; and many other books. He died in 1443, aged 74.

ARETIN, *Francis*, a man of great reading, and well acquainted with the Greek language. He tranſlated into Latin the Commentaries of St Chryſoſtom upon St John, and about 20 homilies of the ſame father: he alſo tranſlated the Letters of Phalaris into Latin, and wrote a treatiſe *De balneis Puteolanis*. He ſtudied at Sienna, about the year 1443; and afterwards taught law there with ſuch reputation, that they called him the *Prince of Subtleties*, and his wit became a proverb. He diſplayed his talents chiefly in diſputes, in which nobody could withſtand him. He gave his opinions in law with ſo much confidence, as to aſſure thoſe who conſulted him that they ſhould carry their cauſe: nor did experience contradict him; for it was a common ſaying at the bar, ſuch a cauſe has been condemned by Aretin, it muſt therefore be loſt. He taught alſo in the univerſity of Piſa, and in that of Ferrara. He was at Rome under the pontificate of Sixtus IV. but did not ſtay here long; for he ſoon perceived that the great hopes which he had built upon his reputation would come to nothing. This pope, however, declared he would have given him a cardinal's hat, had he not thought he ſhould have done a public injury by depriving the youth of ſuch an excellent profeſſor. When old age would not permit him to go through the duties of his office, they diſpenſed with his reading

of

Aretin, Aretologi.

of lectures, and his salary was continued. He continued, however, sometimes to mount the chair; and although his lectures had now but little spirit in them, yet he had still many hearers on account of his reputation. One day when the students were gone to some public shows, there were but 40 persons in his auditory; which so mortified him, that he threw away his book: and crying out, "Aretin shall never explain law to a few persons," retired in a passion, and would teach no more. He was severe in his temper, and never kept a servant longer than a month or two; for it was a maxim of his, "that new-hired servants always served best." He was honoured with the title of *knight*, and spent all his life in celibacy; and his way of living was so parsimonious, that he was thereby enabled to amass a great deal of wealth. He had designed this wealth for the maintenance of a college; but he altered his resolution, and left it to his relations.

ARETIN, *Peter*, a native of Arezzo, who lived in the 16th century. He was famous for his satirical writings; and was so bold as to carry his invectives even against sovereigns, and from thence got the title of the *Scourge of Princes*. Francis I. the emperor Charles V. most of the princes of Italy, several cardinals, and many noblemen, courted his friendship by presents, either because they liked his compositions, or perhaps from an apprehension of falling under the lash of his satire. Aretin became thereupon so insolent, that he is said to have got a medal struck, on one side of which he is represented with these words, IL DIVINO ARETINO; and on the reverse, sitting upon a throne, receiving the presents of princes, with these words, I PRINCIPI TRIBUTATI DA POPOLI, TRIBUTANO IL SERVIDO LORO. Some imagine that he gave himself the title of *Divine*, signifying thereby that he performed the functions of a god upon earth, by the thunderbolts with which he struck the heads of the highest personages. He used to boast, that his lampoons did more service to the world than sermons; and it was said of him, that he had subjected more princes by his pen than the greatest had ever done by their arms. Aretin wrote many irreligious and obscene pieces; such are his dialogues, which were called *Ragionamenti*. There is likewise imputed to him another very obscene performance, *De omnibus Veneris schematibus*. "It was about the year 1525 (says Mr Chevillier *) that Julio Romano, the most famous painter of Italy, instigated by the enemy of the salvation of mankind, invented drawings to engrave 20 plates; the subjects are so immodest that I dare only name them. Peter Aretin composed sonnets for each figure. George Vasari, who relates this in his Lives of the Painters, says, he does not know which would be the greatest impurity, to cast one's eyes upon the drawings of Julio, or to dip into the verses of Aretin." Some say that Aretin changed his libertine principles; but however this may be, it is certain that he composed several pieces of devotion. He wrote a paraphrase on the penitential psalms, and another on Genesis; he wrote also the Life of the Virgin Mary, and that of St Catharine of Sienna, and of St Thomas Aquinas. He was author likewise of some comedies. He died in the year 1556, at the age of 65.

* *Origin de l'imprimerie de Paris*, p. 224.

ARETOLOGI, in *Antiquity*, a sort of philosophers, chiefly of the Cynic or Stoic tribe, who having no school or disciples of their own, haunted the tables of great men, and entertained them in their banquets with disputations on virtue, vice, and other grave topics. These are sometimes also denominated *Circumtores Philosophi*. In this sense, the word is derived from the Greek ἀρετη, *virtue*, and λογος, *discourse*. Some authors choose to derive the word from αρετος *grata*, "agreeable;" and define Aretologi, by persons who strive to divert and entertain their audience with jokes and pleasant tales; which latter seems the more natural explication.

Arezzo

AREZZO, a city of Italy, in Tuscany, seated in the territory of Florence, on the declivity of a hill that overlooks the neighbouring plain, between the Citta di Castelli and Florence. It is an ancient city and a bishop's see; and was famous for a kind of earthen ware much esteemed by the Romans. It was greatly fallen to decay when Cosmo de Medicis took it under his protection; since which it has been recovering gradually. It is famed for being the birthplace of Mecænas. E. Long. 12. 2. N. Lat. 43. 27.

ARGEA, or ARGEI, in *Roman Antiquity*, thirty human figures made of rushes, thrown annually by the priests or vestals into the Tiber, on the day of the ides of May.—Plutarch, in his Roman Questions, inquires why they were called *Argea*. There are two reasons assigned. The first, that the barbarous nations who first inhabited these parts cast all the Greeks they could meet with into the Tiber: for Argians was a common name for all Grecians: but that Hercules persuaded them to quit so inhuman a practice, and to purge themselves of the crime by instituting this solemnity. The second, that Evander, an Arcadian, and a sworn enemy of the Argians, to perpetuate that enmity to his posterity, ordered the figures of Argians to be thus cast into the river.

ARGEIA, or ARGOLIS, a district of Peloponnesus, situated between Arcadia to the west, the Egean sea to the east, Laconia and the Sinus Argolicus to the south, and to the north the territory of Corinth and the Sinus Saronicus (Livy, Ptolemy); so called from ARGOS, the capital: Now *Romania di Morea*.

By the Greeks the people were called *Argeii*, from *Argi* or *Argos*; by the Romans, *Argivi*, Argives. They were a colony who migrated, it is said, from Egypt, under the command of Inachus. Polemon and Ptolemy Mendesius, ancient Greek writers, inform us, that Inachus was contemporary with Amosis, who demolished Avaris, and expelled the shepherds out of Egypt. If, with some learned chronologers, we suppose Inachus to have begun to reform the Argives B. C. 1856, and to have died B. C. 1808, he must have been coeval with Amosis, who reigned in Upper Egypt 15 years before the expulsion of the shepherds, and 10 years after that event, which happened B. C. 1806. Inachus was styled the *Son of the Ocean*, because his origin was not known, or because he had come by sea into Greece. Before his arrival the inhabitants were rude and barbarous. These he united and civilized, and instructed in various arts. His son Phoroneus instituted the laws of government; and, on that account, has been called the *first king in Argos*, the *first of men*, and the *father of mortals*. The family of Inachus, after having kept possession of the

Argemone ‖ Argentati.

throne 347 years, were expelled by Danaus, who arrived B. C. 1559 with a colony from Canaan. Acrisius, the laſt king of Argos, died B. C. 1313; and was ſucceeded by Perſeus, his grandſon, who transferred the ſeat of government to Mycenæ, 544 years from the firſt year of Inachus, in the reign of Cecrops II. king of Athens, and about the time when Pelops the ſon of Tantalus king of Phrygia, having been compelled by Ilus to leave his native country, came into Greece with great wealth, and acquired ſupreme power in the region afterwards called by his name. In the 37th year of Eurytheus, grandſon of Perſeus, the Argonautic expedition happened, i. e. B. C. 1224. This unjuſt and tyrannical prince had aſſigned to Hercules his taſks; and, after the death of that hero, he baniſhed all his children. Theſe were the Heraclidæ who fled to Athens for protection, and who returned to Peloponneſus 50 years after the deſtruction of Troy. In the reign of Agamemnon, the Trojan war commenced, and it was carried on with vigour during the ſpace of ten years. In the year B. C. 1184, Troy was taken, and the war was concluded. Scarcely had the Grecians ſettled in their own country after their return from this dangerous expedition, when the poſterity of Hercules invaded Peloponneſus, took poſſeſſion of it, and divided it among themſelves. Here the kingdom of Mycenæ ended, and that of Sparta was eſtabliſhed on its ruins. See SPARTA.

ARGEMONE, PRICKLY POPPY. See BOTANY *Index*.

ARGENCES, a town of France, in Lower Normandy, now the department of Calvados, on the river Meance. W. Long. 0. 10. N. Lat. 49. 15.

ARGENT, the common French word for *ſilver*, of which metal all white fields or charges are ſuppoſed to conſiſt. Argent of itſelf is uſed in heraldry to ſignify purity, innocence, beauty, and gentleneſs; and, according to G. Leigh, if it is compounded with

Gul.	it ſignifies	boldneſs;
Azu.		courteſy;
Ver.		virtue;
Pur.		favour;
Sab.		religion.

ARGENTAC, a town of France, in the Limoſin, on the river Dordogne. E. Long. 2. 3. N. Lat. 45. 5.

ARGENTAN, a town of France, in the department of Orne, and in the dioceſe of the Seez. It is ſeated on an eminence, in the middle of a fertile plain, on the banks of the river Orne, and has a conſiderable trade in lace. E. Long. 0. 5. N. Lat. 48. 54.

ARGENTARIA, a town of ancient Gaul, thought to ſtand in the place where the city Colmar now ſtands. It is remarkable for a great victory gained by the emperor Gratian over the Lentienſes, in the month of May, A. D. 378. The Romans being but few in number, were at firſt overpowered, and obliged to give ground; but ſoon returning to the charge, they gained in the end a complete victory. Thirty thouſand of the barbarians, and among the reſt their king Triarius, were killed on the ſpot; and all the reſt, except 5000, taken priſoners.

ARGENTARIA *Creta*, pure white earth, found in Pruſſia, and much eſteemed for cleaning plate.

ARGENTARIUS is frequently uſed in Roman writers for a money-changer or banker. The argentarii were monied people, who made a profit either by the changing, or lending of money at intereſt. Theſe had their *tabernæ*, or offices, in the *forum Romanum*, built there as early as the reign of L. Tarquinius Priſcus. The argentarii and fœneratores were much hated on account of their covetouſneſs and extortion.

Argentarius ‖ Argentum.

ARGENTATI MILITES, in *Antiquity*. Livy, lib. vi. ſpeaks of *argentati milites*, as diſtinguiſhed from *aurati*. Aquinas ſuppoſes theſe to have been ſimilar to the argyraſpides and chryſaſpides; but the deſcriptions do not quadrate. Livy only repreſents the argentati as clothed in white linen coats.

ARGENTEUIL, a town of the Iſle of France, ſeated on the river Seine, five miles north-weſt of Paris. It is a very beautiful place, with fine vineyards. In the environs are quarries of ſtucco. In the Benedictine priory they pretend to have the ſeamleſs coat of Chriſt. E. Long. 2. 28. N. Lat. 48. 52.

ARGENTIERE, a ſmall iſland in the Archipelago, near Milo. It is about 18 miles in compaſs; and is full of barren mountains, producing nothing but barley, cotton, and a few grapes fit only for eating. The barley and cotton are ſown round the only village there is in the iſland. The ladies are handſome enough, have no other employment but making cotton ſtockings, and take up with the ſailors, who put into the port. The men all uſe the ſea, and in time become good pilots. They have very little religion, are very ignorant, and of very bad morals. Juſtice is adminiſtered by an itinerant cadi, who is ſometimes the only Muſſulman in the whole iſland. The only article relating to natural hiſtory is the terra Cimolia ſo highly eſteemed by the ancients; it is a kind of white chalk, which is very heavy, without taſte, and crumbles eaſily: they uſe it in waſhing linen. E. Long. 23. 10. N. Lat. 36. 50.

ARGENTINA. See ICHTHYOLOGY *Index*.

ARGENTINUS, a deity worſhipped by the ancients, as the god of ſilver coin; as Æſculanus, whom they made his father, was the god of braſs money, which was in uſe before ſilver.

ARGENTON, a town and county of France, in the department of Indre, divided into two by the river Creuſe. Here was formerly a caſtle; but it was demoliſhed by Lewis XIV. E. Long. 1. 38. N. Lat. 40. 30.

ARGENTORA, *Argentina*, (Notitia); *Argentoratum*, (Ptolemy); *Argentoratus*, (Ammian); a city of the Tribocci; one of the fifty forts built by Druſus on the Rhine, (Florus): an appellation formed by the Romans from the German, *Argen Straſſen*, or *Straten*, "unſafe roads for travellers," from the marauding parties of the garriſons that infeſted the roads. Now *Straſburg*, in Lower Alſace, on the rivulet Ill, near the Rhine. E. Long. 7. 35. N. Lat. 48. 38.

ARGENTUM ALBUM, in our old cuſtoms, ſilver coin, or pieces of bullion that anciently paſſed for money. By Doomſday tenure, ſome rents to the king were paid in *argento albo*, common ſilver pieces of money; other rents in *libris ursis et penſatis*, in metal of full weight and purity: in the next age, that rent which was paid in money, was called *blanch fearm*, and

Argentum || Argonautic.

and afterwards *white rent*; and what was paid in provisions, was termed *black mail*.

ARGENTUM *Dei*, *God's penny*, anciently ſignified earneſt money, or money given to bind a bargain; in ſome places called *erles*, or *arles*, and by the civilians and canoniſts, *arrhæ*. *Et cepit de prædicto Henrico tres denarios de argenti Dei præ manibus.*

ARGENTUM *Muſivum* is a maſs conſiſting of ſilver-like flakes, uſed for the colouring of plaiſter figures, and for other purpoſes, as pigment. It conſiſts of an amalgam of equal parts of tin, biſmuth, and mercury. It is to be mixed with white of eggs, or ſpirit varniſh, and then applied to the intended work, which is afterwards to be burniſhed.

ARGENTUM *Vivum*, *Mercury*, or *Quickſilver*. See MERCURY and CHEMISTRY *Index*.

ARGESTES, is uſed by Vitruvius for the wind which blows from that quarter of the horizon, which is 75° from the ſouth and weſtward. Ricciolus uſes the term to denote the wind which blows at 22° 30′ from the weſt towards the north, coinciding with that which is otherwiſe called *weſt north-weſt*.

ARGIL, in *Ornithology*, a ſpecies of ardea. See ARDEA, ORNITHOLOGY *Index*.

ARGILLA, CLAY, in *Natural Hiſtory*. See CLAY.

ARGIVI, or ARGEII, the people of Argeia or Argolis. See ARGEIA.

ARGO, in antiquity, a ſhip or veſſel celebrated among the poets; being that wherein the Argonauts, of whom Jaſon was the chief, made their expedition in queſt of the golden fleece. Jaſon having happily accompliſhed his enterpriſe, conſecrated the ſhip Argo to Neptune; or, as others ſay, to Minerva, in the iſthmus of Corinth; where, they add, it did not remain long before it was tranſlated into heaven, and made a conſtellation. The generality of authors repreſent the ſhip Argo as of a long make, reſembling the modern galleys; and furniſhed with thirty benches of rowers. It could not, however, be of any great bulk, ſince the Argonauts were able to carry it on their backs from the Danube to the Adriatic ſea.

ARGO *Navis*, the *Ship Argo*, in *Aſtronomy*, is a conſtellation in the ſouthern hemiſphere, whoſe ſtars, in Ptolemy's catalogue, are 45; in Tycho's 11; in the Britannic catalogue, and Street's Appendix, 64.

ARGOB, in *Ancient Geography*, a canton lying beyond Jordan, in the half tribe of Manaſſeh, and in the country of Bathan, one of the moſt fruitful on the other ſide of Jordan. In the region of Argob there were ſixty cities, called *Baſhan-havoth-jair*, which had very high walls and ſtrong gates, without reckoning many villages and hamlets which were not enclofed, Deut. iii. 4 14. and 1 Kings iv. 13. But Argob was more particularly the name of the capital city of the region of Argob, which Euſebius ſays was 15 miles weſt from Geraſa.

ARGONAUTA. See CONCHOLOGY *Index*.

ARGONAUTIC, ſomething belonging to the Argonauts.

The Argonautic expedition is one of the greateſt epochas or periods of hiſtory which Sir Iſaac Newton endeavours to ſettle, and from thence to rectify the ancient chronology. This he ſhows, by ſeveral authorities, to have been one generation or about 30 years earlier than the taking of Troy, and 44 years later than the death of Solomon. See CHRONOLOGY.

Dr Bryant, however, rejects the hiſtory of the Argonautic expedition as a Grecian fable, founded entirely on a tradition derived from Egypt, and allegorically referring to Noah's preſervation, &c. in the ark. But although we are not to believe all the romantic ſtories which poets, and even ſome grave hiſtorians, have told us of thoſe famous adventurers, yet it ſeems unreaſonable to diſcredit entirely the Argonautic expedition. See ARGONAUTS.

ARGONAUTICA, in literary hiſtory, denotes poems on the ſubject and expeditions of the Argonauts. We have the *Argonautics* of Orpheus in epic verſe, publiſhed by H. Stephens; the *Argonauticon* of Valerius Flaccus, in eight books of Latin heroics, in imitation of Apollonius, with reſpect to which Burman obſerves that the imitator has often ſurpaſſed the original; the *Argonautics* of Apollonius Rhodius, an heroic poem, conſiſting of four books, *opus*, as Quintilian calls it, *non contemnendum*.

ARGONAUTS, in antiquity, a company of illuſtrious Greeks, who embarked along with Jaſon, in the ſhip Argo, from Colchis, with a deſign to obtain the golden fleece.

The occaſion of this expedition is thus repreſented by Greek writers. Phryxus, flying with his ſiſter Helle from the rage of their ſtepmother Ino, the daughter of Cadmus, went on board a ſhip, whoſe enſign was a golden ram, and ſailed to Colchis (now Mingrelia, part of Georgia). Helle was drowned by the way, in that ſea which from her was called the *Helleſpont*, now the *Dardanelles*. This, according to ſome, was the ground of the poetical fable, that a ram with a golden fleece ſwam away with them to Colchis; and that the Argonauts undertook their famed expedition, in order to find that fleece. But Strabo and Arrian informs us, that it was a practice of the Colchians to collect gold on Mount Caucaſus by extending fleeces acroſs the beds of the torrents; and as the water paſſed, the metallic particles remained entangled in the wool: hence, according to thoſe hiſtorians, the adventure was named the *expedition of the golden fleece*. Sir Iſaac Newton thinks that this expedition was really an embaſſy ſent by the Greeks, during the inteſtine diviſions of Egypt in the reign of Amenophis, to perſuade the nations upon the coaſts of the Euxine and Mediterranean ſeas, to take that opportunity of ſhaking off the yoke of Egypt, which Seſoſtris had laid upon them; and that fetching the golden fleece, was only a pretence to cover their deſign.

But the moſt judicious and ſatisfactory account of the Argonautic expedition ſeems to be that given by Dr Gillies in his hiſtory of Greece. "The northern diſtricts of Theſſaly being peculiarly expoſed to the dangerous fury of invaders, the petty princes of that province entered into a confederacy for their mutual defence. They aſſembled in ſpring and autumn at Thermopylæ, a place afterwards ſo illuſtrious, and then governed by Amphictyon, a deſcendant of Deucalion, whoſe name is immortalized in the Amphictyonic council. The advantages which the confederates derived from this meaſure, were ſoon perceived by their neighbours. The central ſtates gradually acced-

ei

Argonauts. ed to their alliance; and about the middle of the 14th century before Chriſt, Acriſius king of Argos, and other princes of Peloponneſus, were allowed to ſhare the benefits and ſecurity of this uſeful aſſociation. See AMPHICTYONS.

"After this event, the Amphictyons appear to have long confined themſelves to the original purpoſe of their inſtitution. The ſtates, whoſe meaſures were directed by this aſſembly, found ſufficient occupation in defending their own territories; and near a century elapſed, before they undertook, by common conſent, any diſtant expedition. But it was not to be expected that their reſtleſs activity could be always exhauſted in defenſive war. The eſtabliſhment of the Amphictyons brought together the chiefs moſt diſtinguiſhed by birth and bravery. Glory and emulation prompted them to arms, and revenge directed thoſe arms againſt the barbarians. Jaſon, Admetus, and other chieftans of Theſſaly, having equipped a ſmall fleet in the neighbouring harbour of Iolcus, and particularly the ſhip Argo of ſuperior ſize and conſtruction to any before known, were animated with a deſire to viſit foreign lands, to plant colonies in thoſe parts of them that appeared moſt delightful, and to retort on their inhabitants the injuries which Greece had ſuffered from ſtrangers. The princes of the north having proclaimed their ſpirited deſign over the central and ſouthern provinces, the ſtandard of enterpriſe and glory was ſpeedily ſurrounded by the flower of the Grecian youth, who eagerly embraced this honourable opportunity to ſignalize their manly valour. Peleus, Tydeus, Telamon, and in general the fathers of thoſe heroic chiefs who in the ſucceeding age ſhone with diſtinguiſhed luſtre in the plains of Troy, are numbered among the leaders of the Argonauts. They were accompanied by the choſen warriors, and by the venerable prophets, of their reſpective tribes; by an Eſculapius, the admired father of the healing art; and by the divine Orpheus, whoſe ſublime genius was worthy to celebrate the amazing ſeries of their adventures.

"Theſe adventures, however, have been too much adorned by the graces of poetry, to be the proper ſubject of hiſtorical compoſition. The deſigns of the Argonauts are veiled under the allegorical, or at leaſt doubtful, phraſe, *of carrying off the golden fleece;* which, though eaſily explained, if we admit the report that the inhabitants of the eaſtern banks of the Euxine extended fleeces of wool, in order to collect the golden particles which were carried down by the torrents from Mount Caucaſus, is yet deſcribed in ſuch various language by ancient writers, that almoſt every modern who examines the ſubject, thinks himſelf entitled to offer, by way of explanation, ſome new conjecture of his own. But in oppoſition to the moſt approved of theſe conjectures, we may venture to affirm, that the voyage to Colchis was not undertaken with a view to eſtabliſh extenſive plans of commerce, or to ſearch for mines of gold, far leſs to learn the imaginary art of converting other ſubſtances into that precious metal; all ſuch motives ſuppoſing a degree of ſpeculation and refinement unknown in that age to the gallant but uninſtructed youth of Theſſaly. The real object of the expedition may be diſcovered by its conſequences. The Argonauts fought, conquered, and plundered; they ſettled a colony on the ſhores of the Euxine; and carried into Greece a daughter of the king of Colchis, the celebrated Medea, a princeſs of Egyptian extraction, whoſe crimes and enchantments are condemned to eternal infamy in the immortal lines of Euripides." Argonauts || Argos.

ARGONAUTS *of St Nicholas*, was the name of a military order inſtituted by Charles III. king of Naples, in the year 1382, for the advancement of navigation, or, as ſome ſay, merely for preſerving amity among the nobles. They wore a collar of ſhell, encloſed in a ſilver creſcent, whence hung a ſhip with this device, *Non credo tempori*, "I do not truſt time." Hence theſe Argonaut knights came to be called *knights of the ſhell*. They received the order of St Baſil, archbiſhop of Naples; and held their aſſemblies in the church of St Nicholas, their patron.

ARGOPHYLLUM, WHITE LEAF (*Forſt. Nov. Gen.*): A genus of the monogynia order, belonging to the pentandria claſs of plants. The capſule is trilocular; the nectarium is pyramidal, pentagonous, and the length of the corolla. There is but one ſpecies, the nitidum or gloſſy, a native of New Caledonia. This genus has great affinity with the ivy; but differs in the nectarium, and perhaps in the fruit.

ARGOS, an ancient name of Peloponneſus; from Argos, one of the kings, (Homer, Strabo).

ARGOS, the capital, and an inland town, of Argolis or ARGEIA. It had different ſurnames; as *Achaicum*, from the country, or an ancient people, (Homer); *Hippium*, from its breed of horſes; and *Inachium*, from the river Inachus, which runs by, or from Inachus the founder of the kingdom, whoſe name was alſo given to the river. The Argives, related, that this was one of the river gods who adjudged the country to Juno, when ſhe contended for it with Neptune, which deity in return made their water to vaniſh; the reaſon why the Inachus flowed only after rain, and was dry in ſummer. The ſource was a ſpring, not copious, on a mountain in Arcadia, and the river ſerved there as a boundary between the Argives and Mantineans.

Ancient Argos ſtood chiefly on a flat. The ſprings were near the ſurface; and it abounded in wells, which were ſaid to have been invented by the daughters of Danaus. This early perſonage lived in the acropolis or citadel, which was named *Lariſſa*, and accounted moderately ſtrong. On the aſcent was a temple of Apollo on the ridge, which in the ſecond century continued the ſeat of an oracle. The woman who propheſied was debarred from commerce with the male ſex. A lamb was ſacrificed in the night monthly; when, on taſting of the blood, ſhe became poſſeſſed with the divinity. Farther on was a ſtadium, where the Argives celebrated games in honour of Nemean Jupiter and of Juno. On the top was a temple of Jupiter, without a roof, the ſtatue off the pedeſtal. In the temple of Minerva there, among other curious articles, was a wooden Jupiter, with an eye more than common, having one in the forehead. This ſtatue, it was ſaid, was once placed in a court of the palace of Priam, who fled as a ſuppliant to the altar before it, when Troy was ſacked. In this city was alſo the brazen tower in which Danaë, being confined there by her father, was deflowered by Jupiter.

Argos retains its original name and ſituation, ſtanding

Argos, Arguin

ing near the mountains which are the boundary of the plain, with Napoli and the ſea in view before it. The ſhining houſes are whitened with lime or plaſter. Churches, mud-built cottages and walls, with gardens and open areas, are interperſed, and the town is of conſiderable extent. Above the other buildings towers a very handſome moſque ſhaded with ſolemn cypreſſes; and behind is a lofty hill, brown and naked, of a conical form, the ſummit crowned with a neglected caſtle. The devaſtations of time and war have effaced the old city. We look in vain (ſays Mr Chandler) for veſtiges of its numerous edifices, the theatre, the gymnaſium, the temples, and monuments, which it once boaſted, contending even with Athens in antiquity and in favours conferred by the gods.

Argos *Amphilochium*, (Thucydides), a city of Acarnania, (Scylax, Pliny); its territory Amphilochia: ſituated on the eaſt ſide of the Sinus Ambracius, (Thucydides); diſtant an hundred and eighty ſtadia to the ſouth-eaſt of Ambracia, (Polybius). Alſo called *Argia Amphilochie*, (Mela); *Amphilochi* and *Amphilochici* the people, (Stephanus). The name is from Amphilochus, ſon of Amphiaraus; and from Argos, the name of his country, in Peloponneſus, (Thucydides).

Argos *Hippium*. See Argos in Peloponneſus, *ſupra*.

Argos *Hippium*, the ancient name of Arpi; but Lampe is a ſtill more ancient; afterwards called *Argyrippa*, and *Argippa*; built by, and the reſidence of, Diomedes, on the Cerbalus, (Virgil); afterwards a large and populous city, (Livy): A town of Apulia; now in ruins, and the place called *Arpi*.

Argos *Pelaſgicum*, (Homer); an appellation denoting Theſſaly; ſo called from the Pelaſgi.

Argos *Portus*, a port of Tuſcany, (Strabo): now Porto Ferraro, in the north of the iſland Elba. E. Long. 11. 30. N. Lat. 42. 35.

ARGUIM, an iſland on the coaſt of Africa, about ſixteen miles diſtant from Cape Blanco, ſituated in W. Long. 16. 30. N. Lat. 20. 20. It is ſcarce two miles in length; notwithſtanding which, it was a bone of contention for 87 years between the Portugueſe, Dutch, Engliſh, and French; and, after a variety of fortune, has at laſt been totally abandoned.

This iſland was firſt diſcovered by the Portugueſe in 1444, when a fleet bound to the eaſt touched at Arguim, and from ſome little trade carried on with the natives, it was imagined that a ſettlement there might be of ſome advantage to Portugal. In conſequence of this opinion, a fort was erected on the iſland, and the Portugueſe enjoyed the peaceable poſſeſſion of it till 1638. At this time, the Dutch having received a minute account of the condition of the iſland, reſolved to attack it; and accordingly landed without moleſtation from the garriſon, which was too weak to oppoſe them. The Portugueſe, however, defended themſelves with great intrepidity, and at laſt ſurrendered upon honourable terms. The Dutch immediately ſet about repairing the fortifications, and ſecuring it in the beſt manner they could: however, in 1665, the fort was reduced almoſt to a heap of rubbiſh by an Engliſh ſquadron; but as the fortifications were totally deſtroyed, and only a ſmall garriſon left there, it was eaſily retaken by the Dutch the next year. They now redoubled their diligence in ſtrengthening the iſland, entering into alliance with Mooriſh chiefs procuring a number of families to [illegible] of the fort, and [illegible] in order to monopolize the [illegible] the gum trade. By [illegible] the gum trade of the [illegible] almoſt entirely [illegible] a ſquadron, [illegible] finally ceded to them by the treaty of [illegible]

Though the Dutch now [illegible] they reſolved [illegible] valuable ſettlement. Under pretence of [illegible] of the elector of Brandenburg, [illegible] one of the forts which had been demoliſhed, and there maintained themſelves in ſpite of the utmoſt endeavours of the French Company to diſlodge them. Numberleſs were the memorials, proteſts, reſcripts, &c. which were publiſhed on this occaſion, till a new war in 1701 put an end to them. In 1717, however, the French Company having found all their remonſtrances ineffectual, fitted out a new ſquadron; but this armament did not arrive at Arguim before Dec. 26. 1721. The Dutch defended themſelves with ſuch intrepidity and conduct as had almoſt baffled the utmoſt efforts of the French; but the latter having found means to draw off a Mooriſh chief from his allegiance, the Dutch were obliged to evacuate Arguim, and retire to Portendic, where they fortified themſelves, determining to watch a favourable opportunity for recovering their ſettlement at Arguim. This was not long wanting, by means of the weakneſs of the garriſon and the imprudence of Duval the French director; who having quarrelled with the Moors, was ſurpriſed, defeated, and killed by them; in conſequence of which, the ſettlement fell again into the hands of the Dutch on the 11th of January 1722. In 1723, the Dutch were attacked by another French ſquadron under the command of the Sieur Riguadiere. This gentleman boaſted that the fort could not hold out one day; but though he prevailed ſo far as to get poſſeſſion of the ciſterns which contained the water of the beſieged, he was at laſt ſhamefully repulſed, and forced to raiſe the ſiege with precipitation. The Dutch, however, did not long enjoy the poſſeſſion which they had ſo bravely defended; for, in 1725, their fort was entirely demoliſhed by the French under Du Caſſe, and has never ſince been rebuilt by any European nation.

Argus

ARGUMENT, in *Rhetoric*, and *Logic*, an inference drawn from premiſes, the truth of which is indiſputable, or at leaſt highly probable. See Logic.

Argument, in matters of literature, denotes alſo the abridgment or heads of a book, hiſtory, comedy, chapter, &c. See Syllabus.

ARGUMENTATION, the act of inventing, or framing arguments, of making inductions, and drawing concluſions. See Induction, &c.

Argumentation, according to Cicero, is the delivering or unfolding of an argument — the matter of argumentations is propoſitions; the form, their due diſpoſition, with regard to one another, ſo as a concluſion may be drawn from them. See Enthymeme, Propoſition, Ratiocination, Sorites, Syllogism, &c.

ARGUS, in fabulous hiſtory, was the ſon of Ariſtor, and had 100 eyes, 50 of which were always open. Juno made choice of him to guard Io, whom Jupiter had

Argyllshire. had transformed into a white heifer; but Jupiter, pitying Io for being so closely confined, sent Mercury, who, with his flute, charmed Argus to sleep, sealed up his eyes with his caduceus, and then cut off his head; when Juno, to reward his fidelity, turned him into a peacock, and placed his eyes in his tail.

Argus shell, a species of porcelain shell, beautifully variegated with spots, resembling in some measure those in a peacock's tail.

ARGUTIÆ, witty and acute sayings, which commonly signify something further than what their mere words at first sight seem to import. Writers on rhetoric speak of divers species of argutiæ, viz.

Argutiæ ab alieno, when something is said, which seems repugnant either to the nature and property of a thing, or to common custom, the laws, &c. which yet in reality is consistent therewith; or when something is given as a reason of another, which yet is not the reason of it. For instance, *Si Caius nihil didicisset, errasset minus*; again, *Aureum hoc sæculum est, quia plurimus jam auro honos venit.*

Argutiæ ab allusione, those wherein allusion is made to some history, fable, sentence, proverb, or the like; e. g. *Multi umbram captant et carnem amittunt.*

Argutiæ à comparatis, when two things are compared together, which yet at first sight appear very different from each other, but so as to make a pretty kind of simile or dissimile; e. g. *Par est pauper nil cupiens principi omnia habenti.*

Argutiæ à repugnantibus, when two things meet in a subject, which yet regularly cannot be therein; or when two things are opposed to each other, yet the epithet of the one is attributed to the other, e. g. *Dum tacent clamant.*

ARGYLL, Dukes of. See Campbell.

ARGYLLSHIRE, one of the counties of Scotland, supposed to have formed the principal part of the Caledonian kingdom, when the eastern provinces of Scotland submitted to the irresistible power of the Roman empire. It is bounded on the east by the shires of Perth and Dunbarton; on the north by Inverness; on the west and south by the Irish sea and the frith of Clyde, which enter into various bays, sounds, and inlets, round the coast, and form both in the main land and the islands, many spacious and commodious harbours. This county is subdivided into the districts of Kintyre, Knapdale, Argyll Proper, Cowal, and Lorn. Within the same division are also comprehended several Hebudian islands, of which two or three are of considerable extent. Its length from south to north, between the mull of Kintyre and the point of Ardnamurchan, where it joins the shire of Inverness, is about 114 miles, and its breadth, in several places, including the isles, is 70. The inland part of the county is, in some measure, irregular, with an appendant triangle.

Similar to the other parts of the Highlands of Scotland, this county presents a very wild and horrid prospect of hills, rocks, and huge mountains, piled upon each other in a stupendous and dreadful disorder, bare, bleak, and barren to the view; or, at best covered with shaggy heath, which appears black and dismal to the eye, except in the summer, when it is variegated with an agreeable bloom of a purple colour. Hence lofty mountains, deep glens, inlets of the sea entering far into the land, form the most striking features in the general aspect of this country. Cruacha-Ben in this county is one of the loftiest mountains in Scotland; and where this county meets the confines of Perth and Dunbarton, the mountains contiguous to Ben-Lomond are but little inferior in height to that mountain. The Loch Fine, Loch Etive, Linnhe Loch, are inlets of the sea. The district of Kintyre enters into the north channel, and is almost divided from the main land at the narrow isthmus of Tarbat. The district of Cowal is also nearly peninsulated by Loch Long on one side and Loch Fine on the other. The interior parts of the county are interspersed with a great number of small fresh water lakes. A barrenness of soil and scanty vegetation prevail chiefly on the summits of the great mountains, which exhibit great masses of stratified rocks or groups in a columnar form. Even a number of the glens are barren, and afford little pasturage, and are covered in several places with large fragments, which have been separated and precipitated from the impending rocks. On the declivities of the hills and the banks of the lakes there are, however, numerous woods interspersed, which unite with the lofty mountains to form a most romantic scene. In a run of several miles, fertility, verdure, and cultivation, reign through the valley of Glenurchay. Remains of ancient forests are still very extensive in various places, and these consist chiefly of oaks, ashes, pines, and birches. The level of the country, towards the southern parts, descends the nearest to an equality with that of the sea. The elevation of the country is highest towards the interior parts of the counties of Perth and Inverness. Argyllshire.

The mountains and forests abound with fallow-deer, roes, stags, and all kind of wild game; and all over the sea coast, the moors, the heaths, and on the lakes, the wild fowl are numerous. The mountains feed an innumerable quantity of black cattle, which run wild among the hills in winter as well as summer. The circumambient sea, with its lochs, bays, and harbours, pours forth myriads of fish; and in several places of the county iron, copper, lead, and other metals and minerals, have been dug out. Yet, notwithstanding these numerous local advantages, Argyllshire, as well as the other parts of the Highlands, struggles with many great obstacles in the way of improvement. The want of long leases is one of the most material. What inducement can a person have to manure or cultivate a piece of land which he may have taken, when his first work is to erect a hut for himself; and after all the disagreeable inconveniencies attending it, he holds his farm year by year, dependant on the will of his landlord? When he also reflects, that by cultivating his ground in such a manner, the rent which he was this year scarcely able to pay, may be nearly doubled the next year, how can he be able to defray the expence necessarily attending such an improvement, when he is uncertain of a competent return for his labour? It is hoped that proprietors will at length see the manifest advantage that will arise from granting long leases, both to themselves and their tenants; and, by so doing, either to encourage the tenants to build houses, by paying any expence that may remain unpaid at the end of the lease, or build houses for the tenants themselves; and,

Argyllſhire.

by theſe means, they would have ſurer payment of their rents, which would be augmented; their grounds would be greatly improved, and their vaſſals would enjoy comfort and eaſe. Another great obſtacle to the general improvement is the rugged face of this county, which renders the great roads few in number, and the interſected roads for the purpoſe of conveying manure to the grounds being ſtill in their natural rudeneſs. The chief branch of huſbandry followed over the greateſt part of this county is the management of ſheep, black cattle, and goats. In former times, the ordinary animal ſtock conſiſted moſtly of black cattle: but within theſe laſt 20 years a more ſkilful method of managing flocks of ſheep than was formerly practiſed, having been introduced by the farmers of the low country; theſe have been multiplied with great attention and aſſiduity. Cows and oxen now form only the ſecond conſiderable branch of the animal ſtock.

Barley, oats, and potatoes, are the principal articles of crop; and, in ſome places, the proper manner of tillage has been made uſe of, excellent manures have been laid upon the ground, and the moſt ſuitable rotation of crops has been adopted. In years of ordinary plenty it would appear, that beſides affording a conſiderable ſurplus to the breweries and diſtilleries, the grain commonly produced in this county is a ſufficient ſuſtenance for its inhabitants. Beſides the great profits ariſing from the iron works and the ſalmon fiſheries, the cutting down of woods has brought much money into Argyll, and ſtill continues to be equally beneficial to the labourer and the landlord.

* *This is the Crinan canal, which is now navigable.*

When the projected canal * ſhall be completed, and ſome villages and harbours erected, the populous county of Argyle (Mr Knox affirms) will become one of the moſt valuable provinces of the Britiſh empire. Waſhed on both ſides by the ſea; deeply indented by navigable lakes and bays; having an eaſy communication with the fiſhing grounds on the north Highlands, with Glaſgow and the trading towns on the Clyde, with Ireland, Wales, Whitehaven, Liverpool, Briſtol, and other marts on the weſt coaſt of England; we may eaſily conceive, that the period is at no great diſtance when Argyllſhire will become a great commercial county. To corroborate this opinion, he obſerves, that after a veſſel gets under ſail from this coaſt, ſhe enters at once into the Atlantic, where ſhe meets with no interruption till ſhe makes the coaſt of America or the Weſt Indies. The line, therefore, which nature points out for the inhabitants is that of ſalt-making, fiſhing, ſhip-building, freight or the carrying trade, ſoap and glaſs-making, by means of the kelp upon their ſhores, and ſand found upon the iſlands of Jura and Gigha, which is adapted for the latter.

In this diſtrict the deeds of the celebrated Fingal, whoſe invincible arm gave a check to the progreſs of the conquerors of the world, were moſtly achieved. Many of the ſcenes of the battles of that illuſtrious hero and his gallant followers, which are ſo beautifully deſcribed by Oſſian, are ſtill pointed out, and many very ancient monuments ſtill diſplay the warlike ſpirit of its former inhabitants. In the courſe of the eighth and ninth centuries, Argyll, along with the neighbouring iſles, was conquered by the Danes and Norwegians. For five or ſix centuries it continued under the dominion of Norway, and during that period was under the direct adminiſtration of feudal chieftains, generally of Norwegian extraction, who each maintained an almoſt independent government. Along with the Hebudean iſles, all the weſtern parts of Argyll became the conqueſt of the Scottiſh monarchs in the fourteenth century. Some time after, Macdonald, the repreſentative of this region, obtained leave from the Scotiſh crown to hold his poſſeſſions as a feudatory to that kingdom; but the turbulent ſpirit of him and his family could not remain in quietude, and therefore their rebellions were puniſhed with forfeiture. Their eſtates and titles were beſtowed on the *Campbells*; and theſe have ever ſince retained them in peace and loyalty, beloved and honoured by their country. The county of Argyll gives the title of *duke* and *earl* to the chief of this family. He likewiſe enjoys ſeveral other important poſts under the crown, and is the chief of the Scotiſh nobility. His vaſſals are ſo numerous, that in former times he could on occaſion bring 3000 or 4000 fighting men into the field. Argyllſhire is generally peopled by this clan, and affords a great number of caſtles and ſeats belonging to gentlemen who hold of the duke, and boaſt themſelves deſcended from his family. Argyllſhire ſends one member to parliament: it is alſo the ſeat of a provincial ſynod. It contains 2 royal boroughs and 49 pariſhes; the population of which is as follows.

Argyllſhire.

	Pariſhes.	Population in 1755.	Population in 1792—1793.
1	Ardchattan	2195	2490
	Ardnamurchan	5000	4542
	Campbelltoun	4597	8700
	Craigniſh	769	770
5	Dunoon	1757	1683
	Glaſſary	2751	2568
	Glenorchy	1654	1869
	Inverary	2751	1832
	Inverchaolin	944	584
10	Kilbrandon	1492	2060
	Kilcalmonell	1925	2448
	Kilchrenan	1030	1124
	Kilfinan	1793	1417
	Killean	2391	1911
15	Kilmadan	806	351
	Kilmartin	1150	1537
	Kilmore	1200	1886
	Kilninver	1045	1178
	Knapdale, North	1369	1009
20	Knapdale, South	1292	1524
	Liſmore	2812	3526
	Lochgoylhead	1505	1012
	Morven	1223	1764
	Saddel	1369	1341
25	Southend	1391	1300
	Strachur	1193	1061
	Islands.		
	Mull — Toroſay	1012	1733
	Mull — Kilfinichen	1685	3002
	Mull — Kilninian	2590	3281

Argyraſpides || Aria.

Pariſhes.		Population in 1755.	Population in 1790—1798.
30 Iſlay	Kilarow, Kilchoman, Kildalton	5344	9500
	Jura and Colonſay, &c.	1097	1858
	Coll and Tiry	2702	3457
35	Gigha and Cara	514	614
	Small iſles	943	1339
	Total,	63,291	76,101
			63,291
	Increaſe,		12,810

ARGYRASPIDES, or ARGYROASPIDES, in *Antiquity*, perſons armed with ſilver bucklers, or bucklers ſilvered.

The argyraſpides, according to Quintus Curtius, made the ſecond corps of Alexander's army; the firſt was the phalanx.—According to Juſtin's account, lib. xii. cap. 7. Alexander having penetrated into India, and extended his empire as far as the ocean; for a monument of his glory, ordered the armour of his ſoldiers, and the houſings of his horſes, to be adorned with ſilver. And hence commanded them to be called *argyraſpides*, from the Greek ἀργυρος, *ſilver*, and ἀσπις, *buckler*.

By this author it ſhould ſeem, that Alexander's whole army were called *argyraſpides*.—After that prince's death, the argyraſpides deſpiſed all other chiefs of the army, diſdaining to obey any other, having borne arms under Alexander.

ARGYRIPÆ. See *Argos Hippium*.

ARGYRUNTUM, a maritime town of Illyria (Ptolemy, Pliny). Nor Novigrad, a town of Dalmatia. E. Long. 17. 30. N. Lat. 44. 30.

ARHUSEN, a dioceſe of North Jutland in Denmark, to the ſouth of Wilburg, about 60 miles in length and 30 in breadth. It contains two capital cities, called *Arhuſen* and *Rander*; beſides ſeveral market towns of leſs note, and upwards of 300 villages. Arhuſen, one of the capitals, is advantageouſly ſituated on the coaſt of the Baltic ſea, at the mouth of the river Guda, which runs through it; and it is ſurrounded with foreſts full of game. E. Long. 10. 0. N. Lat. 56. 10.

ARIA, one of the ancient names of Thrace, (Stephanus); that is *martial*, from the character of the people, whoſe country Euripides calls the reſidence of Mars, and Sophocles his place of nativity.

ARIA, and *Ariana*, in *Ancient Geography*, whether the ſame or diſtinct countries authors are not agreed. Ptolemy has only Aria, and knows nothing about Ariana. Pliny mentions only Ariana, and ſays nothing about Aria; but diſtinguiſhes between the Arii and Ariani: Parthia, he ſays, has the Arii to the eaſt, Caramania and the Ariani to the ſouth; from which it is conjectured, the Ariani extended farther than the Arii, and compriſed the Gedroſii and the Drangæ. Arrian has only Aria and Arii, and is ſilent about Ariana. But Strabo gives more extenſive bounds to Ariana than to Aria, without particularly defining them; only in general he ſays, that Ariana begins from India, and quotes Eratoſthenes; according to whom, Ariana is bounded by the Indus on the eaſt; on the ſouth by the Great ſea; by Paropamiſus on the north, and by the mountains, quite to Portæ Caſpiæ; on the weſt by the ſame boundaries by which Parthia is ſeparated from Media, Caramania from Parætacene and Perſia: and thus Ariana is extremely extenſive.—Aria has its limits thus deſcribed by Ptolemy: On the north, ſome parts of Margiana and Bactriana; on the eaſt, the Paropamiſidæ; on the ſouth the Drangiana: and Strabo ſays, the Arii adjoin to the Paropamiſidæ on the weſt. Aria || Ariano.

ARIA, called *Ariapolis*, (Strabo): Now Herat, in Choraſan, ſet down in an ancient map as ſituated on the river Arias, which probably gave name to the country Aria. Arrian calls the river *Areios*; Pliny, *Arius*; Ammian, *Arias*: now Heri, which runs by Alexandria, alſo called *Alexandria Arion* or *Ariorum*.

ARIADNÆA, in Grecian antiquity, two feſtivals at Naxos, in honour of two women named *Ariadne*. One of them being the daughter of King Minos, they had, in the ſolemnity dedicated to her, a ſhow of ſorrow and mourning; and, in memory of her being left by Theſeus near the time of child-birth, it was uſual for a young man to lie down and counterfeit all the agonies of a woman in labour. This feſtival is ſaid to have been firſt inſtituted by Theſeus, to atone for his ingratitude to that princeſs.—The other Ariadne was thought to be of a gay and ſprightly temper; and therefore her feſtival was obſerved with muſic and other expreſſions of mirth and joy.

ARIADNE, daughter of Minos king of Crete. Theſeus being ſent to deſtroy the Minotaur, Ariadne was ſo taken with him, that, as a teſtimony of her love, ſhe gave Theſeus a clue of thread to guide him out of the labyrinth. Theſeus, having killed the Minotaur, carried off the Athenians he had relieved, together with Ariadne; whom, however, he afterwards forſook.

ARIADNIA, in antiquity. See ARIADNÆA.

ARIANA, in *Ancient Geography*, an extenſive country, compriſing Paropamiſus, Arachoſia, Drangiana, and Gedroſia, if we ſuppoſe it to reach to the ſea. See ARIA.

ARIANNA, a ſmall village ſix miles north-eaſt from the city of Tunis. Here is a beautiful range of the ancient Carthaginian aqueduct, 74 feet high, ſupported by columns 16 feet ſquare, and which ſtill increaſed in grandeur the nearer it approached Carthage. The ſtones are all diamond cut. Near this ſpot ſeveral ancient mattamones, or ſubterraneous magazines for corn, have been diſcovered within theſe few years, capable of containing 100 buſhels, ſtrongly arched with large ſquare ſtones. The Moors have already begun to demoliſh them, it being their cuſtom to do ſo with every thing beautiful as ſoon as it comes to light.

ARIANO, a town of Italy, in the kingdom of Naples, in the Ulterior Principality, with a biſhop's ſee. Mr Swinburne deſcribes it as an ugly city, built upon the uneven ſummit of a mountain, with an extenſive look-out on all ſides, but expoſed to every blaſt that blows. It does not appear to be ſo old as the time of the Romans; therefore may be ſuppoſed to owe its riſe to the demolition of ſome neighbouring town, and to the advantages its ſituation afforded for diſcovery and defence. It is but a poor place, without

Arians. out trade or manufactures; having declined ever since the desolation caused by an earthquake in 1456. It reckons about 14,000 inhabitants, and no less than 20 parishes and convents, besides an ill-endowed cathedral. The wine made here is pale, like red Champagne, which it also resembles in a certain tartness, exceedingly refreshing in hot weather. The soil lies upon a soft argillaceous stone. At a small distance to the east is a bank consisting of layers of volcanic earths, interspersed with thick strata of oyster shells.

Below the town is a convent of Dominicans, whose house, within these last hundred years, has been thrice rebuilt, having been as often thrown to the ground by earthquakes. The last and most destructive happened in 1732, fatal to all the country that lies along the eastern verge of the Apennines. In order to secure a retreat in case of future accidents, which from their situation they have every reason to expect, these fathers have constructed a small building of wood, the parts of which being joined together with strong iron chains, are contrived so as to have a proper play, and by yielding to the oscillatory motion of the earth, return easily to their equilibrium. E. Long. 15. 19. N. Lat. 41. 8.

ARIANS, followers of Arius, a presbyter of the church of Alexandria about the year 315; who maintained, that the Son of God was totally and essentially distinct from the Father; that he was the first and noblest of those beings whom God had created, the instrument by whose subordinate operation he formed the universe; and therefore inferior to the Father both in nature and dignity: also, that the Holy Ghost was not God, but created by the power of the Son.

The Arians owned that the Son was the Word, but denied that Word to have been eternal. They held, that Christ had nothing of man in him but the flesh, to which the Λογος or Word was joined, which was the same as the soul in us. See *Lardner's Credibility*, &c. vol. ix. book 1. c. 69.

The Arians were first condemned and anathematized by a council at Alexandria in 320, under Alexander, bishop of that city; who accused Arius of impiety, and caused him to be expelled from the communion of the church; and afterwards by 380 fathers in the general council of Nice, assembled by Constantine in the year 325. But, notwithstanding that, it was not extinguished; on the contrary, it became the reigning religion, especially in the east, where it obtained much more than in the west. Arius was recalled from banishment by the emperor Constantine in two or three years after the council of Nice, and the laws that had been enacted against him were repealed. In the year 335, Athanasius, his zealous opponent, was deposed and banished into Gaul, and Arius and his followers were reinstated in their privileges, and received into the communion of the church. In little more than a year after this, he fell a victim to the resentment of his enemies, and died a tragical death, occasioned probably by poison, or some other violence. The Arian party found a protector in Constantius, who succeeded his father in the empire of the east; and the zeal with which he abetted them produced many animosities and tumults to the time of his death in the year 362. They underwent various revolutions, persecuting and oppressed, under succeeding emperors, according to the degree of interest they had in the civil power, till at length Theodosius the Great exerted every public effort to suppress and disperse them. Arians.

The Arians were divided into various sects, of which ancient writers give an account under the names of *Semi-Arians*, *Eusebians*, *Aetians*, *Eunomians*, *Acacians*, *Pfathyrians*, and others. But these have been commonly distributed into three classes, viz. the *Genuine Arians*, *Semi-Arians*, and *Eunomians*.

Arianism was carried in the 5th century into Africa under the Vandals; and into Asia under the Goths. Italy, the Gauls, and Spain, were also deeply infected with it; and towards the commencement of the sixth century, it was triumphant in many parts of Asia, Africa, and Europe. But it sunk almost all at once, when the Vandals were driven out of Africa, and the Goths out of Italy, by the arms of Justinian. However, it revived again in Italy under the protection of the Lombards in the seventh century.

Erasmus seems to have aimed in some measure to restore Arianism at the beginning of the sixteenth century, in his Commentaries on the New Testament. Accordingly, he was reproached by his adversaries with Arian interpretations and glosses, Arian tenets, &c. To which he made little answer, save that there was no heresy more thoroughly extinct than that of the Arians: *Nulla hæresis magis extincta quam Arianorum.* But the face of things was soon changed. Servetus, a Spaniard by nation, published in 1531 a little treatise against the Trinity, which once more revived the opinions of the Arians in the west. Indeed he rather showed himself a Photinian than an Arian; only that he made use of the same passages of Scripture, and the same arguments against the divinity of our Saviour, with the proper Arians.

It is true, Servetus had not, properly speaking, any disciples; but he gave occasion after his death to the forming of a new system of Arianism in Geneva, much more subtle and artful than his own, and which did not a little perplex Calvin. From Geneva the new Arians removed to Poland, where they gained considerable ground; but at length became Socinians.

The appellation *Arian* has been indiscriminately applied in more modern times, to all those who consider Jesus Christ as inferior and subordinate to the Father; and whose sentiments cannot be supposed to coincide exactly with those of the ancient Arians. Mr Whiston was one of the first divines who revived this controversy, in the beginning of the 18th century. He was followed by Dr Clarke, who published his famous book, entitled "The Scripture Doctrine of the Trinity," &c. In consequence of which, he was reproached with the title of *Semi-Arian*. He was also threatened by the convocation, and combated by argument. Dr Waterland, who has been charged with verging towards Tritheism, was one of his principal adversaries. The history of this controversy during the present century, may be found in a pamphlet, entitled, "An Account of all the considerable Books and Pamphlets that have been wrote on either Side, in the Controversy concerning the Trinity, from the Year 1712; in which is also contained an Account of the Pamphlets written this last Year, on each side, by the Dissenters, to the End of the Year 1719." Published at London 1720.

Aricina
||
Arillus.

ARICINA, in *Mythology*, a ſurname of Diana; under which appellation ſhe was honoured in the foreſt Aricine, ſo called from Aricia a princeſs of the blood royal of Athens. Hippolytus, to whom this princeſs was married, is ſaid to have erected a temple to Diana in this foreſt, where he was concealed after his reſurrection by Eſculapius, and to have eſtabliſhed a prieſt and feſtivals.

ARIUS MONTANUS, a learned Spaniſh divine, employed by Philip II. of Spain to publiſh another edition of the Bible, after that of Cardinal Ximenes; which he finiſhed with applauſe, and died at Seville in 1598.

ARICA, a port town of South America, in the province of Los Charcas, in Peru. It was formerly a conſiderable place, but the earthquakes, which are frequent here, have almoſt entirely ruined it; for there are no more than 150 families, which are moſt of them blacks, mulattoes, and Indians. Moſt of the houſes are made with canes or reeds, ſet upright, and bound together with cords or thongs; and as it never rains here, they are covered only with mats, which makes the place look at a diſtance like a heap of ruins.

The vale of Arica is about a league wide, and ſix leagues long, next the ſea, and is all a barren country, except the ſpot where the old town ſtood, which is divided into little meadows of clover graſs, and plots for ſugar canes, with a few olive and cotton trees intermixed. This vale grows narrower as it runs eaſtward: and a league up there is a village, where they begin to cultivate pimento or Jamaica pepper, which is planted throughout all the reſt of the vale; and there are ſeveral farms, which produce nothing elſe, that bring in the value of 80,000 crowns yearly. The Spaniards of Peru are ſo uſed to this pepper, that they dreſs no proviſions without it. W. Long. 70. 15. S. Lat. 18. 26.

ARICONIUM, a town of the Silures, (Antonine); now Hereford, (Camden). W. Long. 2. 42. Lat. 52. 6.

ARIDAS, a kind of taffety, manufactured in the Eaſt Indies from a ſhining thread which is got from certain herbs, whence they are ſtyled *aridas of herbs*.

ARIDULLAM, in *Natural Hiſtory*, a kind of zarnich found in the Eaſt Indies. See ZARNICH.

ARIES, in *Zoology*. See OVIS.

ARIES, the battering ram. See *BATTERING Ram*.

ARIES, in *Aſtronomy*, a conſtellation of fixed ſtars, drawn on the globe, in the figure of a ram. It is the firſt of the twelve ſigns of the zodiac, from which a twelfth part of the ecliptic takes its denomination.

ARILLUS, an improper term invented by Linnæus, and defined to be the proper exterior coat or covering of the ſeed which falls off ſpontaneouſly.

All ſeeds are not furniſhed with an arillus; in many, a dry covering, or ſcarf ſkin, ſupplies its place. In jaſmine; hound's tongue, *cynogloſſum*; cucumber; fraxinella, *dictamnus*; ſtaff tree, *celaſtrus*; ſpindle tree, *euonymus*; African ſpiræa, *dioſma*; and the coffee tree, *coffea*; it is very conſpicuous.

In the genus hound's tongue, four of theſe arilli or proper coats, each enfolding a ſingle ſeed, are affixed to the ſtylus; and in this circumſtance, ſays Linnæus, does the eſſence of the genus conſiſt. In fraxinella, the arillus is common to two ſeeds. The ſtaff tree has its ſeeds only half involved with this cover. Arillus, Arimanius.

The arillus is either *baccatus*, ſucculent, and of the nature of a berry; as in the ſpindle tree, *euonymus*—*Cartilagineus*, cartilaginous, or griſtly; as in the African ſpiræa, *dioſma*—*Coloratus*, coloured; as in the ſtaff tree—*Elaſticus*, endued with elaſticity, for diſperſing the ſeeds; as is remarkable in the African ſpiræa, *dioſma*, and fraxinella—*Scaber*, rough and knotty; as in hound's tongue.

Although covered with an arillus or other dry coat, ſeeds are ſaid to be naked (*ſemina nuda*) when they are not encloſed in any ſpecies of pericarpium or fruit veſſel; as in the graſſes, and the *labiati* or lipped flowers of Tournefort, which correſpond to the *didynamia gymnoſpermia* of Linnæus. Seeds are ſaid to be covered (*ſemina tecta*) when they are contained in a fruit veſſel, whether capſule, pod, or pulpy pericarpium, of the apple, berry, or cherry kind: (See SEMEN). This exterior coat of the ſeed is, by ſome former writers, ſtyled *calyptra*. See CALYPTRA.

The different ſkins or coverings of the ſeed, are adapted, ſay naturaliſts, for receiving the nutritive juices, and tranſmitting them within.

ARIMANIUS, the evil god of the ancient Perſians. The Perſian Magi held two principles; a good demon, or god, and an evil one: the firſt the author of all good, and the other of all evil: the former they ſuppoſed to be repreſented by light, and the latter by darkneſs, as their trueſt ſymbols. The good principle they named *Yezad* or *Yſdan*, and *Ormozd* or *Hormizda*, which the Greeks wrote *Oromaſdes*; and the evil demon they called *Ahriman*, and the Greeks *Arimanius*. Some of the Magians held both theſe principles to have been from all eternity; but this ſect was reputed heterodox: the original doctrine being, that the good principle only was eternal, and the other created. —Plutarch (*De Iſide et Oſiride*, p. 369) gives the following account of the Magian traditions in relation to theſe gods, and the introduction of evil into the world, viz. That Oromazes conſiſted of the moſt pure light, and Arimanius of darkneſs; and that they were at war with each other: that Oromazes created ſix gods; the firſt, the author of benevolence; the ſecond, of truth; the third, of juſtice, riches, and the pleaſure which attends good actions; and that Arimanius made as many, who were the authors of the oppoſite evils or vices: that then Oromazes, triplicating himſelf, removed as far from the ſun as the ſun is from the earth, and adorned the heaven with ſtars, appointing the dog ſtar for their guardian and leader: that he alſo created 24 other gods, and encloſed them in an egg; but Arimanius having alſo made an equal number, theſe laſt perforated the egg, by which means evil and good became mixed together. However, the fatal time will come, when Arimanius, the introducer of plagues and famine, muſt be of neceſſity utterly deſtroyed by the former, and annihilated; then the earth being made plain and even, mankind ſhall live in a happy ſtate, in the ſame manner, in the ſame political ſociety, and uſing one and the ſame language. Theopompus writes, that, according to the Magians, the ſaid two gods, during the ſpace of 3000 years, alternately conquer, and are conquered; that for other 3000 years, they will

Arimaſpi || Arion.

will wage mutual war, fight, and deſtroy the works of each other, till at laſt Hades (or the evil ſpirit) ſhall periſh, and men become perfectly happy, their bodies needing no food, nor caſting any ſhadow, i. e. being perfectly tranſparent.

ARIMASPI, (Pliny, a people of Sarmatia Europea, to the ſouth of the Montes Riphæi, ſaid by Mela to have but one eye; a fable broached by Ariſteas Proconneſius, according to Herodotus.

ARIMATHEA, a town of Judea, (Evangeliſts); thought to be the ſame with *Ramatha*, 1 Sam. i. and thus in the tribe of Ephraim (Wells).—This place is now called *Ramla*; and is in a very ruinous ſtate, containing nothing but rubbiſh within its boundaries. The aga of Gaza reſides here in a Serai, the floors and walls of which are tumbling down. He maintains about one hundred horſemen, and as many Barbary ſoldiers, who (ſays Mr Volney) are lodged in an old Chriſtian church, the nave of which is uſed as a ſtable, and in an ancient khan, which is diſputed with them by the ſcorpions. The adjacent country is planted with lofty olive trees, diſpoſed in quincunces. The greateſt part of them are as large as the walnut trees of France; but they are daily periſhing through age, the ravages of contending factions, and even from ſecret miſchief: for, in theſe countries, when a peaſant would revenge himſelf of his enemy, he comes by night, and ſaws or cut his trees cloſe to the ground, and the wound, which he takes care to cover, draining off the ſap like an iſſué, the olive tree languiſhes and dies. Amid theſe plantations, we meet, at every ſtep, with dry wells, ciſterns fallen in, and vaſt vaulted reſervoirs, which prove that, in ancient times, this town muſt have been upwards of a league and a half in circumference. At preſent it ſcarcely contains two hundred families. The little land which is cultivated, by a few of them, belongs to the mufti, and two or three perſons related to him. The reſt content themſelves with ſpinning cotton, which is chiefly purchaſed by two French houſes eſtabliſhed there. The only remarkable antiquity at Ramla is the minaret of a ruined moſque on the road to Yafa, which is very lofty; and by an Arabic inſcription appears to have been built by the ſultan Saladin.

ARIMINUM, a town of Umbria, or Romagna, at the mouth of the Ariminus, on the gulf of Venice. The ſeizing on it by Cæſar gave riſe to the civil war. Now called *Rimini*. E. Long. 13. 30. Lat. 44. 8.

ARIOLI, in antiquity, a kind of prophets, or religious conjurers, who by abominable prayers, and horrible ſacrifices at the altars of idols, procured anſwers to their queſtions concerning future events. *Iſid. Orig.* lib. viii. cap. 9. Theſe are alſo called *harioli*, and the operation *hariolation*. Sometimes they were denominated *aruſpices* or *haruſpices*. The *arioli* were diſtinguiſhed by a ſlovenly dreſs, diſorderly and matted beards, hair, &c.

ARION, an excellent muſician and poet, inventor of dithyrambics. Periander entertained him at his court, where getting an eſtate, and returning to Corinth, the ſailors, for lucre of his money, threw him into the ſea; when, according to the poets, a dolphin, charmed with his muſic, took him on her back and carried him ſafe to ſhore.

ARION, an admirable horſe, much more famous in poetic hiſtory than Bucephalus in that of Alexander. Authors ſpeak variouſly of his origin, though they agree in giving him a divine one. His parentage is moſt commonly aſcribed to Neptune. The gods, according to ſome, raiſed him out of the ground by a ſtroke of his trident: according to others, he got him upon the body of the fury Lancaya, according to others, upon that of Ceres, whom he ravaſhed in the form of a horſe, ſhe having previouſly aſſumed the form of a mare to elude his purſuit. This horſe was reared by the Nereids; and being ſometimes yoked with the ſea horſes of Neptune to the chariot of this god, he drew him with incredible ſwiftneſs through the ſea. He had this ſingularity in him, that his right feet reſembled thoſe of a man. Neptune gave him to Copreus king of Hahartus. Copreus made a preſent of him to Hercules; who mounted him when he took the city of Elis, gained the prize with him in the race againſt Cygnus the ſon of Mars near Trœzena, and at laſt made a preſent of him to Adraſtus. It is under this laſt maſter that Arion has ſignalized himſelf the moſt; he won the prize for racing at the Nemean games, which the princes who went to beſiege Thebes inſtituted in honour of Archemorus; and was the cauſe that Adraſtus did not periſh in this famous expedition as all the other chiefs did.

Arion || Ariſto.

ARIOSTO, Lodovico, the famous Italian poet and author of Orlando Furioſo, was born at the city of Reggio in Lombardy in 1474. His father, who was major domo to Duke Hercules, ſerved to the extent of his fortune, ſo left but little at his death. Arioſto, from his childhood, ſhewed great marks of genius, eſpecially in poetry; and wrote a comedy in verſe on the ſtory of Pyramus and Thiſbe, which his brothers and ſiſters played. His father being utterly unlearned, and rather regarding profit than his ſon's inclination, compelled him to ſtudy the civil law, in which having plodded ſome years to no purpoſe, he quitted it for more pleaſing ſtudies; yet often lamented, as Ovid and Petrarch did before him, and our own Milton ſince*, that his father baniſhed him from the Muſes. At the age of 24, Arioſto loſt his father, and found himſelf perplexed with family affairs. However, in about ſix years he was, for his good parts, taken into the ſervice of Don Hippolito, cardinal of Eſte. At this time he had written nothing but a few ſonnets; but now he reſolved to make a poem, and choſe Bayardo's *Orlando Inamorato* for a groundwork. However, he was prevented writing for a great many years, and was choſen as a fit perſon to go on an embaſſy to Pope Julius II. where he gave ſuch ſatisfaction. But he was ſent again, underwent many dangers and difficulties, and at his return was highly favoured. Then, at his leiſure, he again applied himſelf to his poem: but, ſoon after, he incurred the cardinal's diſpleaſure for refuſing to accompany him into Hungary; by which he was ſo diſcouraged, that he deferred writing for 14 years, even till the cardinal's death. After that, he finiſhed by degrees, in great perfection, that which he began with great expectation. Duke Aſtolfo offered him great promotions if he would ſerve him; but preferring liberty to grandeur, he refuſed this and other great offers from princes and cardinals, particularly from Leo X. from all whom he received notwithſtanding great preſents. The duke of Ferrara delighted.

* See his Latin poem, *Ad Patrem*.

Arioſto. delighted ſo much in his comedies, of which he wrote five, that he built a ſtage on purpoſe to have them played in his court, and enabled our poet to build himſelf a houſe in Ferrara, with a pleaſant garden, where he uſed to compoſe his poems, which were highly eſteemed by all the princes in Italy, who ſent him many preſents; but he ſaid, "he would not ſell his liberty for the beſt cardinal's hat in Rome." It was but a ſmall, though convenient houſe: being aſked, why he had not built it in a more magnificent manner, ſince he had given ſuch noble deſcriptions of ſumptuous palaces, beautiful porticos, and pleaſant fountains, in his Orlando Furioſo? he replied, That words were cheaper laid together than ſtones. Upon the door was the following inſcription:

Parva, ſed apta mihi, ſed nulli obnoxia, ſed non
Sordida, parta meo ſed tamen ære, domus.

Which Mr Harrington thus tranſlates:

This houſe is ſmall, but fit for me, but hurtful unto none;
But yet not ſluttiſh, as you ſee, yet paid for with mine own.

In his diet he was temperate, and ſo careleſs of dainties, that he was fit to have lived in the world when they fed upon acorns. Whether he was ever married, is uncertain. He kept company with one Alexandria, to whom it was reported, he was married privately, and a lady of Severa, whom he ſilly mentions in the 24th book of his Orlando, as poets are apt to intermix with their fictions ſome real amours of their own. He was urged to go ambaſſador to Pope Clement, but would by no means accept this embaſſy. He tranſlated the *Menecmi* of Plautus: and all his own comedies were ſo eſteemed, that they were frequently acted by perſons of the firſt quality; and when his Lena was firſt repreſented, Ferdinand of Eſte, afterwards marquis of Maſſa, ſo far honoured the piece as to ſpeak the prologue. He began one of his comedies in his father's lifetime, when the following incident ſhows the remarkable talent he had for poetry. His father one day rebuked him ſharply, charging him with ſome great fault; but all the while he returned him no anſwer. Soon after, his brother began on the ſame ſubject: but he eaſily refuted him, and, with ſtrong arguments juſtified his own behaviour. "Why then (ſaid his brother) did you not ſatisfy my father?" "In truth (ſaid Lodovico) I was thinking of a part in my comedy; and methought my father's ſpeech to me was ſo ſuited to the part of an old man's chiding his ſon, that I forgot I was concerned in it myſelf, and conſidered it only to make it a part of my play." It is alſo reported of Arioſto, that coming by a potter's ſhop, he heard him ſinging a ſtave out of his Orlando, with ſo bad a grace, that, out of all patience, he broke with his ſtick ſeveral of his pots. The potter, in a pitiful tone, aſking what he meant by wronging a poor man that had never injured him? "You raſcal (he replied), I have not done thee half the wrong thou haſt done me: for I have broken but two or three pots of thine, not worth ſo many halfpence; whereas thou haſt broken and mangled a ſtanza of mine worth a mark of gold."

Arioſto was tall, of a melancholy complexion, and ſo abſorbed in ſtudy and meditation, that he often forgot himſelf. His picture was drawn by Titian in a maſterly manner. He was honoured with the laurel by the hands of the emperor Charles V. He was naturally affable, always aſſuming leſs than was his due, yet never putting up a known injury, even from his ſuperiors. He was ſo fearful on the water, that, whenever he went out of a ſhip, he would ſee others go before him; and, on land, he would alight from his horſe on the leaſt apprehenſion of danger. He was of an amorous diſpoſition, and left two natural ſons. He enjoyed the friendſhip of the moſt eminent men of learning of his time, moſt of whom he mentions with great reſpect in the laſt canto of his Orlando Furioſo. His conſtitution was but weakly, ſo that he was obliged to have recourſe to phyſicians the greateſt part of his life. He bore his laſt ſickneſs with great reſolution and ſerenity; and died at Ferrara the 8th of July 1533, according to Sir John Harrington, being then 59 years of age. He was interred in the church of the Benedictine monks, who, contrary to their cuſtom, attended his funeral. He had a buſt erected to him, and the following epitaph, written by himſelf, inſcribed upon his tomb: Arioſto || Ariſba.

Ludovici Arioſti humantur oſſa
Sub hoc marmore, ſeu ſub hac humo, ſeu
Sub quidquid voluit benignus hæres,
Sive hærede benignior comes, ſeu
Opportunius incidens viator:
Nam ſcire haud potuit futura: ſed nec
Tanti erat, vacuam ſibi cadaver
Ut urnam cuperet parare.
Vivens iſta tamen ſibi paravit,
Quæ ſcribi voluit ſuo ſepulchro,
Olim ſi quod haberet id ſepulchrum:
Ne cum ſpiritus hoc brevi peracto
Preſcripto ſpatio miſellos artus,
Quos ægre ante reliquerat, repoſcet,
Hac et hac cinerem huc et huc revellem
Dum noſcat proprium, diu vagetur.

ARIPO, a town on the weſtern coaſt of the iſland of Ceylon, at the mouth of the river Sarunda. To the eaſt of this town, is a bank, where they fiſh for pearls. E. Long. 80. 25. N. Lat. 8. 42.

ARISBA, in *Ancient Geography*, a town of the iſland of Leſbos (Herodot.)—Another of Troas on the continent, in the territory and to the ſouth-eaſt of Abydos (Polyb.): the rendezvous of Alexander's army after the paſſage of the Helleſpont (Arrian); a colony of the Mitylenians (Stephanus); taken and plundered by Achilles (Virgil). The reſidence of Axylus, celebrated by Homer for his hoſpitality, which gained him the character of Friend of mankind.

ARISH, a Perſian long meaſure, containing about 38 Engliſh inches.

ARISI, the Indian name for the plant which produces the rice. See Oryza, Botany *Index*.

ARISTA, or Awn, among botaniſts, a long needle-like beard, which ſtands out from the huſk of a grain of corn, grain, &c.

ARISTÆUS, ſon of Apollo and Cyrene, whom, for the many ſervices he had rendered to mankind by his knowledge of all profitable arts, the gods placed amongſt the ſtars; ſo that he is the Aquarius in the zodiac. The reſemblance of his hiſtory to that of Moſes has been curiouſly diſcuſſed by Huetius.

ARISTANDER, a famous ſoothſayer under Alexander the Great, over whom he gained a wonder-

ful

Aristarchus || Aristides.

ful influence by the good success of his art. He had already had the same employment at the court of King Philip; and it was he who explained better than his brethren the dream that this prince had after having married Olympias.

ARISTARCHUS, a Grecian philosopher of Samos, one of the first that maintained that the earth turns upon its own centre. We are not sure of the age in which he lived; and have none of his works but a *Treatise of the greatness and distance of the Sun and Moon*, translated into Latin by Frederic Commandine, and published with Pappus's explanation in 1572.

ARISTARCHUS, a celebrated grammarian, much esteemed by Ptolemy Philometor, who committed to him the education of his son. He applied himself chiefly to criticism, and made a revisal of Homer's poems, but in too magisterial a way; for such verses as he did not like he treated as spurious. He commented on other poets. Cicero and Horace made use of his name to express a very rigid critic.

ARISTIDA. See BOTANY *Index*.

ARISTIDES, surnamed the *Just*, one of the most celebrated characters of his age for purity and integrity, and cotemporary with Themistocles, was the son of Lysimachus, a man of middle rank, and born at Athens. His dispositions and temper from his youth all conjoined in anticipating that greatness to which he afterwards arose. To a firm, resolute, and placid temper, he likewise added a great contempt of dissimulation, and an utter abhorrence of every thing dishonourable. He began very early to meditate on subjects of government, and applied to his studies with the greatest assiduity. He imbibed a strong predilection for oligarchy upon becoming acquainted with the laws of Lycurgus, which excited his admiration, and gave him a distaste of the unlimited democracy then established in his native city. On the other hand, Themistocles favoured democracy; and even when at school, he is said to have been his constant antagonist on that point. A perpetual opposition to one another in all political points, whether just or unjust, was the consequence of this difference of opinion when their abilities raised them to several important stations in the state. Although it was deemed absolutely necessary at that time for a party leader to oppose all the acts of his antagonist whatsoever with the greatest vehemence, yet Aristides did not follow this practice without self-reproach. It is related, that one day having firmly opposed a proposal of Themistocles in the assembly, which in his own conscience he knew to be right, on coming out he exclaimed, "The affairs of the Athenians will never prosper, till they throw both of us into the *barathrum*," (the dungeon for condemned criminals). Aristides maintained a strict observance of justice, and when in his own opinion a friend was guilty, he would never screen him from the punishment due to his offence. Neither desirous of profit nor honour, he served his country from the purest principles of duty; and his character was so universally known, that once, when these verses of Æschylus, describing Amphiaraus, were recited in the theatre,

"To be, and not to seem, is this man's maxim;
"His mind reposes on its conscious worth,
"And wants no other praise."

the eyes of the whole assembly were immediately directed towards Aristides, as the true picture of the idea the poet willed to delineate. When in the office of public treasurer, by connivance Themistocles and several others of making free with the public property, he raised up a party against himself; and when he gave in his own account, they, to retaliate the affront, accused him of embezzling the public stores; and it was only by the interposition of the court of Areopagus that he got himself cleared. He was, however, again elected to that office, and then, although he kept a secret account against those people concerned with him, he permitted them to plunder without reprehension. It consequently fell out that he was universally praised, his acquaintance cultivated with the greatest avidity, and interest made on all sides to continue him in office: But when the people were about to proceed to elect him again to that trust, he severely chided them, and said, "that while he had served them with fidelity he was treated with calumny, and incurred their displeasure; now that he had really violated his trust, he met with general applause, and was reckoned an excellent citizen." He then exhibited their deceits, and made all parties ashamed of the part they had acted.

Aristides was present at the battle of Marathon, fought B. C. 490, and was next in command among the Athenians to Miltiades; and there, upon that general's proposing to come to battle as soon as possible, he seconded his motion with the utmost vigour. In the field he distinguished himself with intrepidity, valour, and generosity; and being left after the battle to secure the spoils, he executed his trust with honour and fidelity, bringing all to the public account, reserving nothing for himself. He was elected to the important office of chief magistrate the year following; but by the art of Themistocles, the high authority he had attained by his merits was at length converted into an accusation against him; and he was accordingly banished by the ostracism, although a mild, often an unjust, measure in the policy of the Athenian state, for getting a temporary relief from the presence of any political influence by which they thought their independence might be injured. A circumstance which occurred on this occasion gives a very high idea of his character. A rustic citizen coming up to vote against him, although not personally acquainted with Aristides, and being himself unable to write, ordered the first person whom he met, who accidentally happened to be Aristides himself, to inscribe his name upon the shell, signifying his acquiescence in the sentence of the state. The patriot said, "Did Aristides ever injure you?" The rustic replied, "I do not so much as know him, but I am tired with everywhere hearing him called *the Just*."—Aristides, taking the shell, wrote his own name upon it, and returned it in silence to the voter. Lifting up his hands to heaven, he supplicated that the Athenians might never behold the day which should induce them to remember Aristides; and then quitted the city.

As the Persians were meditating a new invasion of Greece, he employed himself in his exile in encouraging the Greeks to defend their liberties against the invaders. The Athenians immediately, upon the approach of Xerxes, recalled Aristides, whose absence they began sincerely to regret, along with their other exiles.

Ariſtides. exiles. At this critical moment, upon his return, he ſuſpended all political animoſities; and upon underſtanding that it was the deſign of Themiſtocles to fight the Perſian navy in the ſtraits of Salamis, he waited on him in private, propoſed an oblivion of all paſt circumſtances, extolled his intentions, and gave him his ſincere promiſe to do the utmoſt in his power towards effecting his deſigns. Themiſtocles, ſome time after the battle of Salamis, acquainted the Athenians that he had formed a ſcheme which, although it was of ſuch a nature as forbade his public avowal of it to them, was of ineſtimable advantage to the ſtate. They immediately ordered that he ſhould communicate it to Ariſtides. It was a project for conſuming the whole confederate fleet of Greece by fire, except their own ſhips; and thus the entire ſway of the ſea would be left to the Athenian navy. Ariſtides reported that nothing could be more unjuſt, and at the ſame time nothing more advantageous than the ſcheme of Themiſtocles. Upon this report, the people immediately determined to drop any further thought of it. It was equally to the honour of the Athenians that they made ſuch a determination, and to Ariſtides that he was made the referree on this occaſion. Ariſtides, before the battle of Platæa, was of conſiderable ſervice in perſuading his countrymen, who were elevated with their former ſucceſſes, to ſubmit to the ſuperior power of the Spartans, and in preſerving peace and amity between the confederate forces. He acquitted himſelf with great valour and reſolution in the engagement, and was appointed after the victory to determine a very dangerous diſpute concerning the honour of the day, which he conferred upon the Platæans, giving up the claim of the Athenians, the Lacedemonians following his example. Upon the rebuilding of Athens, he was the firſt perſon to promote a law which divided the adminiſtration among the citizens at large, and enjoined that the archons, or chief magiſtrates, ſhould be elected out of the whole body of the people, who had ſo deſervedly merited the favour of the ſtate.

Ariſtides, upon the continuation of the war with the Perſians, was ſent along with Cimon, the ſon of Miltiades, to take the command of the Athenian forces in the confederate army. Their humility and meekneſs, compared with the haughty domineering temper of Pauſanias, ſo engaged the reſt of the allies, that the ſuperiority of rank was conferred upon Athens, with the joint concurrence of the other ſtates. The nomination of Ariſtides to lay an equal aſſeſſment upon all the ſtates for the purpoſe of defraying the expence of the war, was a ſignal proof of the high idea all Greece had of his integrity and juſtice. The wiſdom and impartiality with which he performed this commiſſion gave univerſal ſatisfaction. He obliged all the confederates, after this affair was terminated, ſolemnly to ſwear to all the articles of aſſociation. The advice which he afterwards gave the Athenians to extend their own territories beyond their proper limits muſt certainly have proceeded from ſome very preſſing neceſſity, when he thus drew down the conſequences of the perjury upon his own head. Ariſtides, on Themiſtocles's falling under the diſpleaſure of the ruling party, would not concur in a capital proſecution of him; and inſtead of triumphing over an old enemy, he always ſpoke of him after his baniſhment with the higheſt reſpect.

In that age it was common for men who had borne the higheſt public offices to make no increaſe to their private fortunes, but no man ever carried this diſintereſtedneſs to ſo high a pitch as Ariſtides. He was indeed ſo remarkably poor, that when a proſecution was raiſed againſt Callias, a rich relation of his, the orator pleading againſt him, in order to excite the indignation of his audience, made ſome remarks upon his ability to aſſiſt Ariſtides, and at the ſame time upon the extreme indigence in which he permitted him and his family to live. Callias, in his vindication, was forced to call Ariſtides to teſtify that he had frequently offered him conſiderable ſums, which he would not accept, ſaying, "that it better became Ariſtides to glory in his poverty than Callias in his riches," which appear to have been acquired not very honourably. Ariſtides, Ariſtippus.

This great man died about 407 years B. C. according to ſome at Athens, at an advanced age; others ſay at Pontus, where he was tranſacting public buſineſs. He was buried at the public expence, and his daughters received portions out of the public treaſury; and a penſion and an eſtate in land was beſtowed on his ſon Lyſimachus, in gratitude for the ſignal ſervices Ariſtides had done his country. (*Gen. Biog.*)

Aristides of Miletus, a famous Greek author, often cited by the ancients.

Aristides, a very eloquent Athenian orator, who became a convert to the Chriſtian religion, and about the year 124 preſented to the emperor Adrian an apology for the Chriſtians.

Aristides, *Ælius*, a celebrated orator, born in Myſia, about 129 years before the Chriſtian era. The beſt edition of his works is that of Oxford, printed in Greek and Latin, in two volumes quarto.

Aristides, a painter cotemporary with Apelles, flouriſhed at Thebes about the 122d Olympiad. He was the firſt, according to Pliny, who expreſſed character and paſſion, the human mind, and its ſeveral emotions; but he was not remarkable for ſoftneſs of colouring. "His moſt celebrated picture was of an infant (on the taking of a town) at the mother's breaſt, who is wounded and expiring. The ſenſations of the mother were clearly marked, and her fear leſt the child, upon failure of the milk, ſhould ſuck her blood." "Alexander the Great (continues the ſame author) took this picture with him to Pella."

Junius (in his Treatiſe *de Pictura Veterum*) conjectures that the following beautiful epigram of Æmilianus was written on this exquiſite picture:

Ελκε, ταλαν, παρα μητρος ον ȣκ ετι μαζον αμιλξεις
Ελκυσον υστατιον ναμα κατα φθιμενης.
Η δη γαρ ξιφεσσι λιποπνοος αλλα τα μητρος
Φιλτρα και ειν αιδη παιδοκομειν ἑμαθον,

Elegantly tranſlated thus:

Suck, little wretch, while yet thy mother lives,
Suck the laſt drop her fainting boſom gives!
She dies! her tenderneſs ſurvives her breath,
And her fond love is provident in death.

Webb's Inquiry, Dial. VII. p. 161.

ARISTIPPUS, the founder of the Cyrenaic ſect of philoſophy, was the ſon of Aretades, and born at Cyrene in Libya. He flouriſhed about the 96th Olympiad. The great reputation of Socrates induced him

Ariſtippus. to leave his own country, and remove to Athens, that he might have the ſatisfaction of hearing his diſcourſes. He was chiefly delighted with thoſe diſcourſes of Socrates that related the moſt to pleaſure: which he aſſerted to be the ultimate end in which all happineſs conſiſts. His manner of life was agreeable to his opinion; for he indulged himſelf extremely in all the luxuries of dreſs, wine, and women. Though he had a good eſtate, and three country ſeats, yet he was the only one of the diſciples of Socrates who took money for teaching; which being obſerved by the philoſopher, he aſked Ariſtippus, How he came to have ſo much? Who in reply aſked him, How he came to have ſo little? Upon his leaving Socrates, he went to Ægina, as Athenæus informs us, where he lived with more freedom and luxury than before. Socrates ſent frequent exhortations to him, in order to reclaim him; but all in vain; and with the ſame view he publiſhed that diſcourſe which we find in Xenophon. Here Ariſtippus became acquainted with Laïs, the famous courtezan of Corinth; for whoſe ſake he took a voyage to that city. He continued at Ægina till the death of Socrates, as appears from Plato's *Phædo*, and the epiſtle which he wrote upon that occaſion. He returned at laſt into his own country Cyrene, where he profeſſed philoſophy, and inſtituted a ſect which, as we obſerved above, was called the *Cyrenaic*, from the place, and by ſome writers the *Hedonic* or voluptuous, from its doctrines. During the height of the grandeur of Dionyſius the Sicilian tyrant, a great many philoſophers reſorted to him; and among the reſt Ariſtippus, who was tempted thither by the magnificence of that court. Dionyſius aſking him the reaſon of his coming, he replied, "That it was in order to give what he had, and to receive what he had not:" or, as others repreſent it, "That when he wanted wiſdom, he went to Socrates; but now as he wanted money, he was come to him." He very ſoon inſinuated himſelf into the favour of Dionyſius; for being a man of a ſoft eaſy temper, he conformed himſelf exactly to every place, time, and perſon, and was a complete maſter of the moſt refined complaiſance.

We have ſeveral remarkable paſſages concerning him during his reſidence at that court mentioned by Diogenes Laërtius. Dionyſius, at a feaſt, commanded that all ſhould put on women's purple habits, and dance in them. But Plato refuſed, repeating theſe lines:

> I cannot in this gay effeminate dreſs
> Diſgrace my manhood or my ſex betray.

But Ariſtippus readily ſubmitted to the command, and made this reply immediately:

> ——At feaſts, where mirth is free,
> A ſober mind can never be corrupted.

At another time, interceding with Dionyſius in behalf of a friend, but not prevailing, he caſt himſelf at his feet: being reproved by one for that exceſs of humility, he replied, "That it was not he who was the cauſe of that ſubmiſſion; but Dionyſius, whoſe ears were in his feet." Dionyſius ſhowed him three beautiful courtezans, and ordered him to take his choice. Upon which he took them all three away with him, alleging that Paris was puniſhed for preferring one to the other two: but when he had brought them to his door, he diſmiſſed them, in order to ſhow that he could either enjoy or reject with the ſame indifference. Having deſired money of Dionyſius, the latter obſerved to him, that he had aſſured him a wiſe man wanted nothing. "Give me (ſays he) what I aſk, and we will look of that afterwards." When Dionyſius had given it him, "Now (ſays he), you ſee I do not want." By his complaiſance he gained ſo much upon Dionyſius, that he had a greater regard for him than for all the reſt of the philoſophers, though he ſometimes ſpoke with ſuch freedom to that king, that he incurred his diſpleaſure. When Dionyſius aſked, Why philoſophers haunted the gates of rich men, but not rich men thoſe of philoſophers: he replied, "Becauſe the latter know what they want, and the others not." Another time, Dionyſius repeating (out of Sophocles, as Plutarch affirms, who aſcribes this to Zeno) theſe verſes,

> He that with tyrants ſeeks for bare ſupport,
> Enſlaves himſelf, though free he came to court;

he immediately anſwered,

> He is no ſlave, if he be free to come.

Diocles, as Laertius informs us, related this in his *Lives of the Philoſophers*; though others aſcribe this ſaying to Plato. Ariſtippus had a conteſt with Antiſthenes the Cynic philoſopher; notwithſtanding which, he was very ready to employ his intereſt at court for ſome friends of Antiſthenes, to preſerve them from death, as we find by a letter of his to that philoſopher. Diogenes followed the example of his maſter Antiſthenes in ridiculing Ariſtippus, and called him the *court ſpaniel*.

We have many apophthegms of his preſerved. To one who aſked him what his ſon would be the better for being a ſcholar? "If for nothing elſe (ſaid he), yet for this alone, that when he comes into the theatre, one ſtone will not ſit upon another." When a certain perſon recommended his ſon to him, he demanded 500 drachmas; and upon the father's replying, that he could buy a ſlave for that ſum, "Do ſo (ſaid he), and then you will be maſter of a couple." Being reproached, becauſe, having a ſuit of law depending, he fee'd a lawyer to plead for him, "Juſt ſo (ſaid he), when I have a great ſupper to make, I always hire a cook." Being aſked what was the difference between a wiſe man and a fool, he replied, "Send both of them together naked to thoſe who are acquainted with neither of them, and then you will know." Being reproved by a certain perſon (who, according to Mr Stanley, was Plato) for his coſtly and voluptuous feaſts, "I warrant you (ſaid he), that you would not have beſtowed three farthings upon ſuch a dinner;" which the other confeſſing, "Why, then (ſaid he), I find myſelf leſs indulgent to my palate than you are to your covetous humour;" or, as it is otherwiſe repreſented, "I find, that I love my belly, and you love your money. "When Simus, treaſurer to Dionyſius, ſhowed him his houſe magnificently furniſhed, and paved with coſtly marble, (for he was a Phrygian, and conſequently profuſe); Ariſtippus ſpit in his face: upon which the other growing angry, "Why, truly (ſaid he), I could not find a fitter place." His ſervant carrying after him a great weight of money, and being ready to ſink upon the road under his

Ariſtippus. burden, he bid him throw away all that was too much for him to carry. Horace mentions this fact in his third ſatire of the ſecond book:

> *Quid ſimile iſti*
> *Græcus Ariſtippus? qui ſervos projicere aurum*
> *In media juſſit Libya, quia tardius irent*
> *Propter onus ſegnes.*

Being aſked, what things were moſt proper for children to be inſtructed in? he anſwered, "Thoſe which might prove of the greateſt advantage to them when they came to be men." Being reproached for going from Socrates to Dionyſius, he replied, "That he went to Socrates when he wanted ſerious inſtruction, and to Dionyſius for diverſion." Having received money of Dionyſius at the ſame time that Plato accepted a book only, and being reproached for it, "The reaſon is plain (ſays he), I want money, and Plato wants books." Having loſt a conſiderable farm, he ſaid to one who ſeemed exceſſively to compaſſionate his loſs, "You have but one field; I have three left: why ſhould not I rather grieve for you?" Plutarch, who relates this in his book, *De Tranquillitate Animi*, obſerves upon it, that it is very abſurd to lament for what is loſt, and not to rejoice for what is left. When a perſon told him, "That the land for his ſake was loſt," he replied "That it was better ſo, than that he ſhould be loſt for the land." Being caſt by ſhipwreck aſhore on the iſland of Rhodes, and perceiving mathematical ſchemes and diagrams drawn upon the ground, he ſaid, "Courage, friends; for I ſee the footſteps of men."

After he had lived a long time with Dionyſius, his daughter Arete ſent to him, to deſire his preſence at Cyrene, in order to take care of her affairs, ſince ſhe was in danger of being oppreſſed by the magiſtrates. But he fell ſick in his return home, and died at Lipara, an Eolian iſland. With regard to his principal opinions, like Socrates, he rejected the ſciences as they were then taught, and pretended that logic alone was ſufficient to teach truth and fix its bounds. He aſſerted, that pleaſure and pain were the criterions by which we were to be determined; that theſe alone made up all our paſſions; that the firſt produced all the ſoft emotions, and the latter all the violent ones. The aſſemblage of all pleaſure, he aſſerted, made true happineſs, and that the beſt way to attain this was to enjoy the preſent moments. He wrote a great many books: particularly the hiſtory of Libya, dedicated to Dionyſius; ſeveral Dialogues; and four books of the Luxury of the ancients. There are four epiſtles of his extant in the Socratic collection publiſhed by Leo Allatius.

Beſides Arete his daughter, whom he educated in philoſophy, Ariſtippus had alſo a ſon, whom he diſinherited for his ſtupidity. Arete had a ſon who was named *Ariſtippus* from his grandfather, and had the ſurname of Μητροδίδακτος from his mother's inſtructing him in philoſophy. Among his auditors, beſides his daughter Arete, we have an account of Æthiops of Ptolemais, and Antipater of Cyrene. Arete communicated the philoſophy which ſhe received from her father to her ſon Ariſtippus, who tranſmitted it to Theodorus *the Atheiſt*, who inſtituted the ſect called *Theodorean*. Antipater communicated the philoſophy of Ariſtippus to Epitimedes his diſciple; Epitimedes to Paræbates: Paræbates to Hegeſias and Anniceris: and theſe two laſt improving it by ſome additions of their own, obtained the honour each of them of giving a name to the *Hegeſiac* and *Annicerian* ſect. Ariſto ‖ Ariſtophanes.

ARISTO, a Stoic philoſopher, the diſciple of Zeno the chief of the Stoics, flouriſhed about 290 years before the Chriſtian era. He differed but little from his maſter Zeno. He rejected logic as of no uſe, and natural philoſophy as being above the reach of the human underſtanding. It is ſaid, that being bald, the ſun burnt his head; and that this cauſed his death.—There is a ſaying of his recorded, which might render the doctrine of Ariſtippus leſs odious than it ordinarily is; (ſee ARISTIPPUS). He uſed to ſay, "That a philoſopher might do thoſe of his hearers a prejudice who put a wrong interpretation upon good meanings; as for example that the ſchool of Ariſtippus might ſend out debauchees, and that of Zeno Cynics:" which ſeems to imply, that the doctrine of this philoſopher never produced this effect but when it was miſunderſtood. He ſhould alſo have added, that every teacher is therefore obliged to forbear laying down ambiguous maxims, or to prevent falſe gloſſes being put upon them.

ARISTOCRACY, a form of government where the ſupreme power is veſted in the principal perſons of the ſtate. The word is derived from ἄριστος, *optimus*, and κρατεω, *impero*, "I govern." The ancient writers of politics prefer the ariſtocratical form of government to all others. The republic of Venice is an ariſtocracy. Ariſtocracy ſeems to coincide with oligarchy; which, however, is more ordinarily uſed to ſignify a corruption of an ariſtocratical ſtate, where the adminiſtration is in the hands of too few, or where ſome one or two uſurp the whole power.

ARISTOGITON, a famous Athenian, who, with Harmodius, killed Hipparchus tyrant of Athens, about 513 years before the Chriſtian era. The Athenians erected a ſtatue to him.

ARISTOLOCHIA, BIRTHWORT. See BOTANY *Index*.

ARISTOMENES, a general of the Meſſenians, renowned for his valour and virtue. See MESSENIA.

ARISTOPHANES, a celebrated comic poet of Athens. He was cotemporary with Plato, Socrates, and Euripides; and moſt of his plays were written during the Peloponneſian war. His imagination was warm and lively, and his genius particularly turned to raillery. He had alſo great ſpirit and reſolution; and was a declared enemy to ſlavery, and to all thoſe who wanted to oppreſs their country. The Athenians ſuffered themſelves in his time to be governed by men who had no other views than to make themſelves maſters of the commonwealth. Ariſtophanes expoſed the deſigns of theſe men, with great wit and ſeverity, upon the ſtage. Cleon was the firſt whom he attacked, in his comedy of the *Equites*; and as there was not one of the comedians who would venture to perſonate a man of his great authority, Ariſtophanes played the character himſelf, and with ſo much ſucceſs, that the Athenians obliged Cleon to pay a fine of five talents, which were given to the poet. He deſcribed the affairs of the Athenians in ſo exact a manner, that his comedies are a faithful hiſtory of that people. For this reaſon, when Dionyſius king of Syracuſe deſired

to

Ariſtophanes.

to learn the ſtate and language of Athens, Plato ſent him the comedies of Ariſtophanes, telling him, theſe were the beſt repreſentations thereof. He wrote above 50 comedies; but there are only 11 extant which are perfect: theſe are, Plutus, the Clouds, the Frogs, Equites, the Acharnenſes, the Waſps, Peace, the Birds, the Eccleſiazuſæ or female Orators, the Theſmophoſiazuſæ or Prieſteſſes of Ceres, and Lyſiſtrata. The Clouds, which he wrote in ridicule of Socrates *, is the moſt celebrated of all his comedies. Madame Dacier tells us, ſhe was ſo much charmed with this performance, that after ſhe had tranſlated it, and read it over 200 times, it did not become the leaſt tedious to her, which ſhe could not ſay of any other piece; and that the pleaſure which ſhe received from it was ſo exquiſite, that ſhe forgot all the contempt and indignation which Ariſtophanes deſerved for employing his wit to ruin a man, who was wiſdom itſelf, and the greateſt ornament of the city of Athens. Ariſtophanes having conceived ſome averſion to the poet Euripides, ſatirizes him in ſeveral of his plays, particularly in his Frogs and his Theſmophoſiazuſæ. He wrote his Peace in the 10th year of the Peloponneſian war, when a treaty for 50 years was concluded between the Athenians and the Lacedemonians, though it continued but ſeven years. The Acharnenſes was written after the death of Pericles and the loſs of the battle in Sicily, in order to diſſuade the people from intruſting the ſafety of the commonwealth to ſuch imprudent generals as Lamachus. Soon after, he repreſented his Aves or Birds; by which he admoniſhed the Athenians to fortify Decelæa, which he calls by a fictitious name *Nephelococcygia*. The Veſpæ, or Waſps, was written after another loſs in Sicily, which the Athenians ſuffered from the miſconduct of Chares. He wrote the Lyſiſtrata when all Greece was involved in a war; in which comedy the women are introduced debating upon the affairs of the commonwealth; when they come to a reſolution, not to go to bed with their huſbands till a peace ſhould be concluded. His Plutus, and other comedies of that kind, were written after the magiſtrates had given orders that no perſon ſhould be expoſed by name upon the ſtage. He invented a peculiar kind of verſe, which was called by his name, and is mentioned by Cicero in his Brutus; and Suidas ſays, that he alſo was the inventor of the tetrameter and octameter verſe.

* See the article *Socrates*.

Ariſtophanes was greatly admired among the ancients, eſpecially for the true Attic elegance of his ſtyle. The time of his death is unknown; but it is certain he was living after the expulſion of the tyrants by Thraſybulus, whom he mentions in his Plutus and other comedies. There have been ſeveral editions and tranſlations of this poet. Nicodemus Friſchin, a German, famous for his claſſical knowledge, in the 16th century, tranſlated Plutus, the Clouds, the Frogs, the Equites, and the Acharnenſes, into Latin verſe. Quintus Septimus Florens, rendered into Latin verſe the Waſps, the Peace, and Lyſiſtrata; but his tranſlation is full of obſolete words and phraſes. Madame Dacier publiſhed at Paris, in 1692, a French verſion of Plutus and the Clouds, with critical notes, and an examination of them according to the rules of the theatre. Mr Lewis Theobald likewiſe tranſlated theſe two comedies into Engliſh, and publiſhed them with remarks. The moſt noble edition of this author is that publiſhed by Ludolphus Kuſter, at Amſterdam, in folio, in 1710, and dedicated to Charles Montague earl of Halifax.

Ariſtotelia.

ARISTOTELIA, in antiquity, annual feaſts celebrated by the citizens of Stagyra, in honour of Ariſtotle, who was born there; and in gratitude for his having procured from Alexander the rebuilding and repeopling of that city, which had been demoliſhed by King Philip.

ARISTOTELIAN, ſomething that relates to the philoſopher Ariſtotle.

ARISTOTELIAN *Philoſophy*, the philoſophy taught by Ariſtotle, and maintained by his followers. The Ariſtotelian is otherwiſe called the *Peripatetic Philoſophy*. See PERIPATETICS.

ARISTOTELIANS, a ſect of philoſophers, otherwiſe called *Peripatetics*.

The Ariſtotelians and their dogmata prevailed for a long while in the ſchools and univerſities; even in ſpite of all the efforts of the Carteſians, Newtonians, and other corpuſcularians. But the ſyſtems of the latter have at length gained the pre-eminence; and the Newtonian philoſophy in particular is now very generally received. The principles of Ariſtotle's philoſophy, the learned agree, are chiefly laid down in the four books *de Cælo*; the eight books of *Phyſical Auſcultation*, φυσικης ακροασεως, belonging rather to logic, or metaphyſics, than to phyſics. Inſtead of the more ancient ſyſtems, he introduced matter, form, and privation, as the principles of all things; but he does not ſeem to have derived much benefit from them in natural philoſophy. His doctrines are, for the moſt part ſo obſcurely expreſſed, that it has not yet been ſatisfactorily aſcertained what were his ſentiments on ſome of the moſt important ſubjects. He attempted to refute the Pythagorean doctrine concerning the twofold motion of the earth; and pretended to demonſtrate, that the matter of the heavens is ungenerated, incorruptible, and ſubject to no alteration: and he ſuppoſed that the ſtars were carried round the earth in ſolid orbs. The reader will find a diſtinct account of the logical part of his philoſophy, by Dr Reid profeſſor of moral philoſophy in the univerſity of Glaſgow, and in the ſecond volume of Lord Kames's Sketches of the Hiſtory of man. Mr Harris has publiſhed a commentary on his Categories, under the title of *Philoſophical Arrangements*.

ARISTOTLE, the chief of the Peripatetic philoſophers, born at Stagyra, a ſmall city in Macedon, in the 99th Olympiad, about 384 years before the birth of Chriſt. He was the ſon of Nicomachus, phyſician to Amyntas the grandfather of Alexander the Great. He loſt his parents in his infancy; and Proxenes, a friend of his father, who had the care of his education, taking but little notice of him, he quitted his ſtudies, and gave himſelf up to the follies of youth. After he had ſpent moſt of his patrimony, he entered into the army: but not ſucceeding in this profeſſion, he went to Delphos to conſult the oracle what courſe of life he ſhould follow; when he was adviſed to go to Athens and ſtudy philoſophy. He accordingly went thither about 18 years of age, and ſtudied under Plato till he was 37. By this time he had ſpent his whole fortune; and we are told that he got his living by ſelling powders, and ſome receipts in pharmacy. He

Ariſtotle. followed his ſtudies with moſt extraordinary diligence, ſo that he ſoon ſurpaſſed all in Plato's ſchool. He ate little, and ſlept leſs; and that he might not overſleep himſelf, Diogenes Laertius tells us, that he lay always with one hand out of the bed, having a ball of braſs in it, which, by its falling into a baſon of the ſame metal, awaked him. We are told, that Ariſtotle had ſeveral conferences with a learned Jew at Athens, and that by this means he inſtructed himſelf in the ſciences and religion of the Egyptians, and thereby ſaved himſelf the trouble of travelling into Egypt. When he had ſtudied about 15 years under Plato, he began to form different tenets from thoſe of his maſter, who became highly piqued at his behaviour. Upon the death of Plato, he quitted Athens; and retired to Atarnya, a little city of Myſia, where his old friend Hermias reigned. Here he married Pythias, the ſiſter of this prince, whom he is ſaid to have loved ſo paſſionately, that he offered ſacrifice to her. Some time after, Hermias having been taken priſoner by Meranon the king of Perſia's general, Ariſtotle went to Mitylene the capital of Leſbos, where he remained till Philip king of Macedon having heard of his great reputation, ſent for him to be tutor to his ſon Alexander, then about 14 years of age: Ariſtotle accepted the offer; and in eight years taught him rhetoric, natural philoſophy, ethics, politics, and a certain ſort of philoſophy, according to Plutarch, which he taught nobody elſe. Philip erected ſtatues in honour of Ariſtotle; and for his ſake rebuilt Stagyra, which had been almoſt ruined by the wars.

The laſt fourteen years of his life he ſpent moſtly at Athens, ſurrounded with every aſſiſtance which men and books could afford him for proſecuting his philoſophical inquiries. The glory of Alexander's name, which then filled the world, enſured tranquillity and reſpect to the man whom he diſtinguiſhed as his friend: but after the premature death of that illuſtrious protector, the invidious jealouſy of prieſts and ſophiſts inflamed the malignant and ſuperſtitious fury of the Athenian populace; and the ſame odious paſſions which proved fatal to the offenſive virtue of Socrates, fiercely aſſailed the fame and merit of Ariſtotle. To avoid the cruelty of perſecution, he ſecretly withdrew himſelf to Chalcis in Eubœa. This meaſure was ſufficiently juſtified by a prudent regard to his perſonal ſafety; but leſt his conduct ſhould appear unmanly, when contraſted with the firmneſs of Socrates in a ſimilar ſituation, he condeſcended to apologize for his flight, by ſaying, that he was unwilling to afford the Athenians a ſecond opportunity "to ſin againſt philoſophy." He ſeems to have ſurvived his retreat from Athens only a few months; vexation and regret probably ended his days.

Beſides his treatiſes on philoſophy, he wrote alſo on poetry, rhetoric, law, &c. to the number of 400 treatiſes, according to Diogenes Laertius; or more, according to Francis Patricius of Venice. An account of ſuch as are extant, and of thoſe ſaid to be loſt, may be ſeen in Fabricius's *Bibliotheca Græca*. He left his writings with Theophraſtus, his beloved diſciple and ſucceſſor in the Lycæum; and forbade that they ſhould ever be publiſhed. Theophraſtus, at his death, truſted them to Neleus, his good friend and diſciple; whoſe heirs buried them in the ground at Scepſis, a town of Troas, to ſecure them from the king of Pergamus, who made great ſearch everywhere for books to adorn his library. Here they lay concealed 160 years, until, being almoſt ſpoiled, they were ſold to one Apellicon, a rich citizen of Athens. Sylla found them at this man's houſe, and ordered them to be carried to Rome. They were ſome time after purchaſed by Tyrannion a grammarian: and Andronicus of Rhodes having bought them of his heirs, was in a manner the firſt reſtorer of the works of this great philoſopher; for he not only repaired what had been decayed by time and ill keeping, but alſo put them in a better order, and got them copied. There were many who followed the doctrine of Ariſtotle in the reigns of the 12 Cæſars, and their numbers increaſed much under Adrian and Antoninus: Alexander Aphrodinus was the firſt profeſſor of the Peripatetic philoſophy at Rome, being appointed by the emperors Marcus Aurelius and Lucius Verus; and in ſucceeding ages the doctrine of Ariſtotle prevailed among almoſt all men of letters, and many commentaries were written upon his works. Ariſtotle, Ariſtoxenus.

The firſt doctors of the church diſapproved of the doctrine of Ariſtotle, as allowing too much to reaſon and ſenſe; but Anatolius biſhop of Laodicca, Didymus of Alexandria, St Jerome, St Auguſtin, and ſeveral others, at length wrote and ſpoke in favour of it. In the ſixth age, Boethius made him known in the weſt, and tranſlated ſome of his pieces into Latin. But from the time of Boethius to the eighth age, Joannes Damaſcenus was the only man who made an abridgment of his philoſophy, or wrote any thing concerning him. The Grecians, who took great pains to reſtore learning in the 11th and following ages, applied much to the works of this philoſopher, and many learned men wrote commentaries on his writings: amongſt theſe were Alfarabius, Algazel, Avicenna, and Averroes. They taught his doctrine in Africa, and afterwards at Cordova in Spain. The Spaniards introduced his doctrine into France, with the commentaries of Averroes and Avicenna; and it was taught in the univerſity of Paris, until Amauri having ſupported ſome particular tenets on the principles of this philoſopher, was condemned of hereſy, in a council held there in 1210, when all the works of Ariſtotle that could be found were burnt, and the reading of them forbidden under pain of excommunication. This prohibition was confirmed, as to the phyſics and metaphyſics, in 1215, by the pope's legate; though at the ſame time he gave leave for his logic to be read, inſtead of St Auguſtin's uſed at that time in the univerſity. In the year 1265, Simon, cardinal of St Cecil, and legate from the holy ſee, prohibited the reading of the phyſics and metaphyſics of Ariſtotle. All theſe prohibitions, however, were taken off in 1366; for the cardinals of St Mark and St Martin, who were deputed by Pope Urban V. to reform the univerſity of Paris, permitted the reading of thoſe books which had been prohibited: and in the year 1448, Pope Stephen approved of all his works, and took care to have a new tranſlation of them into Latin.

ARISTOXENUS, one of the moſt ancient muſical writers, was born at Tarentum, a city in *Magna Græcia*, now Calabria. He was the ſon of a muſician, and it appears that he lived about the time of Alexander the Great and his firſt ſucceſſors. His *Harmonics*

monics in three books, all that are come down to us, together with Ptolemy's Harmonics, were firſt publiſhed by Gogavinus, but not very correctly, at Venice, 1562, in 4to, with a Latin verſion. John Meurſius next tranſlated the three books of Ariſtoxenus into Latin, from the MS. of Joſ. Scaliger; but according to Meibomius, very negligently. With theſe he printed at Leyden, 1616, 4to, Nicomachus and Alypius, two other Greek writers on muſic. After this, Meibomius collected theſe muſical writers together; to which he added Euclid, Bacchius ſenior, Ariſtides Quintilianus; and publiſhed the whole with a Latin verſion and notes, from the elegant preſs of Elzevir, Amſt. 1652. The learned editor dedicates theſe ancient muſical treatiſes to Chriſtina queen of Sweden. Ariſtoxenus is ſaid by Suidas to have written 452 different works, among which thoſe on muſic were the moſt eſteemed; yet his writings on other ſubjects are very frequently quoted by ancient authors, notwithſtanding Cicero and ſome others ſay that he was a bad philoſopher, and had nothing in his head but muſic. The titles of ſeveral of the loſt works of Ariſtoxenus, quoted by Athenæus and others, have been collected by Meurſius in his notes upon this author, by Tonſius and Menage, all which Fabricius has digeſted into alphabetical order.

ARITHMETIC

IS a ſcience which explains the properties of numbers, and ſhows the method or art of computing by them.

Hiſtory of Arithmetic.

1 AT what time this ſcience was firſt introduced into the world, we can by no means determine. That ſome part of it, however, was coeval with the human race is abſolutely certain. We cannot conceive how any man endowed with reaſon can be without ſome knowledge of numbers. We are indeed told of nations in America who have no word in their language to expreſs a greater number than three; and this they calll *pætarrarorincouroac*: but that ſuch nations ſhould have no idea of a greater number than this, is abſolutely incredible. Perhaps they may compute by threes, as we compute by tens; and this may have occaſioned the notion that they have no greater number than three.

But though we cannot ſuppoſe any nation, or indeed any ſingle perſon, ever to have been without ſome knowledge of the difference between greater and ſmaller numbers, it is poſſible that mankind may have ſubſiſted for a conſiderable time without bringing this ſcience to any perfection, or computing by any regular ſcale, as 10, 60, &c. That this, however, was very early introduced into the world, even before the flood, we may gather from the following expreſſion in Enoch's prophecy, as mentioned by the apoſtle Jude: "Behold, the Lord cometh with *ten thouſands* of his ſaints." This ſhows, that even at that time men had ideas of numbers as high as we have at this day, and computed them alſo in the ſame manner, namely by tens. The directions alſo given to Noah concerning the dimenſions of the ark, leave us no room to doubt that he had a knowledge of numbers, and of meaſures likewiſe. When Rebekah was ſent away to Iſaac, Abraham's ſon, her relations wiſhed ſhe might be the mother of *thouſands of millions*; and if they were totally unacquainted with the rule of multiplication, it is difficult to ſee how ſuch a wiſh could have been formed.

It is probable, therefore, that the four fundamental rules of Arithmetic have always been known to ſome nation or other. No doubt, as ſome nations, like the Europeans formerly, and the Africans and Americans now, have been immerſed in the moſt abject and deplorable ſtate of ignorance, they might remain for ſome time unacquainted with numbers, except ſuch as they had immediate occaſion for; and, when they came afterwards to improve, either from their own induſtry, or hints given by others, might fancy that they themſelves, or thoſe from whom they got the hints, had invented what was known long before. The Greeks 2 were the firſt European nation among whom arithmetic arrived at any degree of perfection. M. Goguet is of opinion, that they firſt uſed pebbles in their calculations: a proof of which he imagines to be, that the word ψηφίζω, which comes from ψῆφος a little ſtone, or flint, among other things, ſignifies *to calculate*. The ſame, he thinks, is probable of the Romans; and derives the word *calculation* from the uſe of little ſtones (*calculi*) in their firſt arithmetical operations.

If this method, however, was at all made uſe of, it muſt have been but for a ſhort time, ſince we find the Greeks very early made uſe of the letters of the alphabet to repreſent their numbers. The 23 letters of their alphabet taken according to their order, at firſt denoted the numbers 1, 2, 3, 4, 5, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 100, 200, 300, 400, 500 600, 700, and 800; to which they added the three following, ϛ, ϟ, Ͳ, to repreſent 6, 90, and 900. The difficulty of performing arithmetical operations by ſuch marks as theſe may eaſily be imagined, and is very conſpicuous from Archimedes's treatiſe concerning the dimenſions of a circle.

The Romans followed a like method; and beſides 3 characters for each rank of claſſes, they introduced others for five, fifty, and five hundred. Their method is ſtill uſed for diſtinguiſhing the chapters of books, and ſome other purpoſes. Their numeral letters and values are the following:

I	V	X	L	C	D	M
One,	five,	ten,	fifty,	one hundred,	five hundred,	one thouſand.

Any number, however great, may be repreſented by repeating and combining theſe according to the following rules:

1ſt, When the ſame letter is repeated twice, or oftener, its value is repreſented as often. Thus II ſignifies two; XXX thirty, CC two hundred.

2d, When a numeral letter of leſſer value is placed after one of greater, their values are added: thus XI ſignifies

signifies eleven, LXV fixty-five, MDCXXVIII one thouſand ſix hundred and twenty-eight.

§ I, When a numeral letter of leſſer value is placed before one of greater, the value of the leſſer is taken from that of the greater: thus IV ſignifies four, XL forty, XC ninety, CD four hundred.

Sometimes IↃ is uſed inſtead of D for 500, and the value is increaſed ten times by annexing Ↄ to the right hand.

Thus IↃ ſignifies	500.	Alſo CIↃ is uſed for	1000
IↃↃ	5000	CCIↃↃ for	10000
IↃↃↃ	50000	CCCIↃↃↃ for	100000

Sometimes thouſands are repreſented by drawing a line over the top of the numeral, $\overline{V}$ being uſed for five thouſand, $\overline{L}$ for fifty thouſand, $\overline{CC}$, two hundred thouſand.

4 Sexageſimal arithmetic.

About the year of Chriſt 200, a new kind of arithmetic, called *ſexageſimal*, was invented, as is ſuppoſed, by Claudius Ptolemæus. The deſign of it was to remedy the difficulties of the common method, eſpecially with regard to fractions. In this kind of arithmetic, every unit was ſuppoſed to be divided into 60 parts, and each of theſe into 60 others, and ſo on: hence any number of ſuch parts were called *ſexageſimal fractions*; and to make the computation in whole numbers more eaſy, he made the progreſſion in theſe alſo ſexageſimal. Thus from one to 59 were marked in the common way: then 60 was called a *ſexageſima prima*, or firſt ſexageſimal integer, and had one ſingle daſh over it; ſo 60 was expreſſed thus I′; and ſo on to 59 times 60, or 3540, which was thus expreſſed LIX′. He now proceed to 60 times 60, which he called a *ſexageſima ſecunda*, and was thus expreſſed I″. In like manner, twice 60 times 60, or 7200, was expreſſed by II″; and ſo on till he came to 60 times 3600, which was a third ſexageſimal, and expreſſed thus, I‴. If any number leſs then 60 was joined with theſe ſexageſimals, it was added in its proper characters without any daſh; thus I′XV repreſented 60 and 15, or 75; I′VXXV is four times 60 and 25, or 265; X″II′XV, is ten times 3600, twice 60 and 15, or 36, 135, &c. Sexageſimal fractions were marked by putting the daſh at the foot, or on the left hand of the letter: thus $I_{,}$ or $'I$, denoted $\frac{1}{60}$; $I_{,,}$ or $''I$, $\frac{1}{3600}$, &c.

5 Indian Characters, when brought into uſe.

The moſt perfect method of notation, which we now uſe, came into Europe from the Arabians, by the way of Spain. The Arabs, however, do not pretend to be the inventors of them, but acknowledge that they received them from the Indians. Some there, are indeed, who contend that neither the Arabs nor the Indians were the inventors, but that they were found out by the Greeks. But this is by no means probable; as Maximus Planudes, who lived towards the cloſe of the 13th century, is the firſt Greek who makes uſe of them: and he is plainly not the inventor; for Dr Wallis mentions an inſcription on a chimney in the parſonage houſe of Helendon in Northamptonſhire, where the date is expreſſed by M° 133, inſtead of 1133. Mr Luffkin furniſhes a ſtill earlier inſtance of their uſe, in the window of a houſe, part of which is a Roman wall, near the market place in Colcheſter; where between two carved lions ſtands an eſchutcheon with the figures 1090. Dr Wallis is of opinion that theſe characters muſt have been uſed in England at leaſt as long ago as the year 1050. if not in ordinary affairs, at leaſt in mathematical ones, and in aſtronomical tables. How theſe characters came to be originally invented by the Indians we are entirely ignorant.

The introduction of the Arabian characters in notatiōn did not immediately put an end to the ſexageſimal arithmetic. As this had been uſed in all the aſtronomical tables, it was for their ſakes retained for a conſiderable time. The ſexageſimal integers went firſt out, but the fractions continued till the invention of decimals.

6 Treatiſes on Arithmetic.

The oldeſt treatiſes extant, upon the theory of arithmetic, are the ſeventh, eighth, and ninth books of Euclid's Elements, where he treats of proportion and of prime and compoſite numbers; both of which have received improvements ſince his time, eſpecially the former. The next, of whom we know any thing, is Nicomachus the Pythagorean, who wrote a treatiſe of the theory of arithmetic, conſiſting chiefly of the diſtinctions and diviſions of numbers into claſſes, as plain, ſolid, triangular, quadrangular, and the reſt of figurate numbers as they are called, numbers odd and even, &c. with ſome of the more general properties of the ſeveral kinds. This author is, by ſome, ſaid to have lived before the time of Euclid; by others, not long after. His arithmetic was publiſhed at Paris in 1538. The next remarkable writer on this ſubject is Boethius, who lived at Rome in the time of Theodoric the Goth. He is ſuppoſed to have copied moſt of his works from Nicomachus.

From this time no remarkable writer on arithmetic appeared till about the year 1200, when Jordanus of Namur wrote a treatiſe on this ſubject, which was publiſhed and demonſtrated by Joannes Faber Stapulenſis in the 15th century, ſoon after the invention of printing. The ſame author alſo wrote upon the new art of computation by the Arabic figures, and called this book *Algoriſmus Demonſtratus*. Dr Wallis ſays, this manuſcript is in the Savillian library at Oxford, but it hath never yet been printed. As learning advanced in Europe, ſo did the knowledge of numbers: and the writers on arithmetic ſoon became innumerable. About the year 1464, Regiomontanus, in his triangular tables, divided the radius into 10,000 parts, inſtead of 60,000; and thus tacitly expelled the ſexageſimal arithmetic. Part of it, however, ſtill remains in this diviſion of time, as of an hour into 60 minutes, a minute into 60 ſeconds, &c. Ramus in his arithmetic, written about the year 1550, and publiſhed by Lazarus Schonerus in 1586, uſed decimal periods in carrying on the ſquare and cube roots to fractions. The ſame had been done before by our countrymen Buckley and Record; but the firſt who publiſhed an expreſs treatiſe on decimals was Simon Stevinius, about the year 1582. As to the circulating decimals, Dr Wallis is the firſt who took much notice of them. He is alſo the author of the *arithmetic of infinites*, which has been very uſefully applied to geometry. The greateſt improvement, however, which the art of computation ever received, is the invention of logarithms. The honour of this invention is unqueſtionably due to Baron Napier of Merchiſton in Scotland, about the end of the 16th or beginning of the

Notation and Numeration.

the 17th century. By these means arithmetic has advanced to a degree of perfection which the ancients could never have imagined possible, much less hoped to attain; and we believe it may now be reckoned one of those few sciences which have arrived at their utmost height, and which is in its nature capable of little further improvement.

Chap. I. NOTATION AND NUMERATION.

7 The first elements of arithmetic are acquired during our infancy. The idea of one, though the simplest of any, and suggested by every single object, is perhaps rather of the negative kind, and consists partly in the exclusion of plurality, and is not attended to till that of number be acquired. Two is formed by placing one object near another; three, four, and every higher number, by adding one continually to the former collection. As we thus advance from lower numbers to higher, we soon perceive that there is no limit to this increasing operation; and that, whatever number of objects be collected together, more may be added, at least, in imagination; so that we can never reach the highest possible number, nor approach near it. As we are led to understand and add numbers by collecting objects, so we learn to diminish them by removing the objects collected; and if we remove them one by one, the number decreases through all the steps by which it advanced, till only one remain, or none at all. When a child gathers as many stones together as suits his fancy, and then throws them away, he acquires the first elements of the two capital operations in arithmetic. The idea of numbers, which is first acquired by the observation of sensible objects, is afterwards extended to measures of space and time, affections of the mind, and other immaterial qualities.

Small numbers are most easily apprehended: a child soon knows what two and what three is; but has not any distinct notion of seventeen. Experience removes this difficulty in some degree; as we become accustomed to handle larger collections, we apprehend clearly the number of a dozen or a score; but perhaps could hardly advance to a hundred without the aid of classical arrangement, which is the art of forming so many units into a class, and so many of these classes into one of a higher kind, and thus advancing through as many ranks of classes as occasion requires. If a boy arrange an hundred stones in one row, he would be tired before he could reckon them; but if he placed them in ten rows of ten stones each, he will reckon an hundred with ease; and if he collect ten such parcels, he will reckon a thousand. In this case, ten is the lowest class, a hundred is a class of the second rank, and a thousand is a class of the third rank.

There does not seem to be any number naturally adapted for constituting a class of the lowest, or any higher rank, to the exclusion of others. However, as ten has been universally used for this purpose by the Hebrews, Greeks, Romans, and Arabians, and by all nations who have cultivated this science, it is probably the most convenient for general use. Other scales, however, may be assumed, perhaps on some occasions, with superior advantage; and the principles of arithmetic will appear in their full extent, if the student can adapt them to any scale whatever: thus, if eight were the scale, 6 times 3 would be two classes, and two units, and the number 18 would then be represented by 22. If 12 were the scale, 5 times 9 would be three classes and nine units, and 45 would be represented by 39, &c. Notation and Numeration.

It is proper, whatever number of units constitutes a class of the lower rank, that the same number of each class should make one of the next higher. This is observed in our arithmetic, ten being the universal scale: but it is not regarded in the various kinds of monies, weights, and the like, which do not advance by any universal measure; and much of the difficulty in the practice of arithmetic arises from that irregularity.

As higher numbers are somewhat difficult to apprehend, we naturally fall on contrivances to fix them in our minds, and render them familiar: but notwithstanding all the expedients we can fall upon, our ideas of high numbers are still imperfect, and generally far short of the reality; and though we can perform any computation with exactness, the answer we obtain is often incompletely apprehended.

It may not be amiss to illustrate, by a few examples, the extent of numbers which are frequently named without being attended to. If a person employed in telling money reckon an hundred pieces in a minute, and continue at work ten hours each day, he will take seventeen days to reckon a million; a thousand men would take 45 years to reckon a billion. If we supposed the whole earth to be as well peopled as Britain, and to have been so from the creation, and that the whole race of mankind had constantly spent their time in telling from a heap consisting of a quadrillion of pieces, they would hardly have yet reckoned the thousandth part of that quantity.

All numbers are represented by the ten following characters.

1 2 3 4 5 6 7 8 9 0

One, two, three, four, five, six, seven, eight, nine, cypher.

The nine first are called *significant figures*, or *digits*; and sometimes represent units, sometimes tens, hundreds, or higher classes. When placed singly, they denote the simple numbers subjoined to the characters. When several are placed together, the first or right-hand figure only is to be taken for its simple value: the second signifies so many tens, the third so many hundreds, and the others so many higher classes, according to the order they stand in. And as it may sometimes be required to express a number consisting of tens, hundreds, or higher classes, without any units or classes of a lower rank annexed; and as this can only be done by figures standing in the second, third, or higher place, while there are none to fill up the lower ones; therefore an additional character or cypher (0) is necessary, which has no signification when placed by itself, but serves to supply the vacant places, and bring the figures to their proper station.

The following table shows the names and divisions of the classes.

8.

Addition.

8.	4.	3.	7.	9.	8.	2.	5.	6.	4.	7.	3.	8.	9.	7.	2.	6.	4.	5.
Trillions.	Hundred thousand of billions.	Ten thousand of billions.	Thousand billions.	Hundred billions.	Ten billions.	Billions.	Hundred thousand of millions.	Ten thousand of millions.	Thousand millions.	Hundred millions.	Ten millions.	Millions.	Hundred thousands.	Ten thousands.	Thousands.	Hundreds.	Tens.	Units.

The firſt ſix figures from the right hand are called the *unit period*, the next ſix the *million period*, after which the *trillion*, *quadrillion*, *quintillion*, *ſextillion*, *ſeptillion*, *octillion*, and *nonillion* periods follow in their order.

It is proper to divide any number, before we reckon it, into periods and half periods, by different marks. We then begin at the left hand, and read the figures in their order, with the names of their places, from the table. In writing any number, we muſt be careful to mark the figures in their proper places, and ſupply the vacant places with cyphers.

As there are no poſſible ways of changing numbers, except by enlarging or diminiſhing them according to ſome given rule, it follows, that the whole art of arithmetic is comprehended in two operations, *Addition* and *Subtraction*. However, as it is frequently required to add ſeveral equal numbers together, or to ſubtract ſeveral equal ones from a greater, till it be exhauſted, proper methods have been invented for facilitating the operation in theſe caſes, and diſtinguiſhed by the names of *Multiplication* and *Diviſion*; and theſe four rules are the foundation of all arithmetical operations whatever.

As the idea of number is acquired by obſerving ſeveral objects collected, ſo is that of fractions by obſerving an object divided into ſeveral parts. As we ſometimes meet with objects broken into two, three, or more parts, we may conſider any or all of theſe diviſions promiſcuouſly, which is done in the doctine of vulgar fractions, for which a chapter will be allotted. However, ſince the practice of collecting units into parcels of tens has prevailed univerſally, it has been found convenient to follow a like method in the conſideration of fractions, by dividing each unit into ten equal parts, and each of theſe into ten ſmaller parts; and ſo on. Numbers divided in this manner are called *Decimal Fractions*.

Chap. II. ADDITION.

Addition is that operation by which we find the amount of two or more numbers. The method of doing this in ſimple caſes is obvious, as ſoon as the meaning of number is known, and admits of no illuſtration. A young learner will begin at one of the numbers, and reckon up as many units ſeparately as there are in the other, and practice will enable him to do it at once. It is impoſſible, ſtrictly ſpeaking, to add more than two numbers at a time. We muſt firſt find the ſum of the firſt and ſecond; then we add the third to that number; and ſo on. However, as the ſeveral ſums obtained are eaſily retained in the memory, it is neither neceſſary nor uſual to mark them down. When the numbers conſiſt of more figures than one, we add the units together, the tens together, and ſo on. But if the ſum of the units exceed ten, or contain ten ſeveral times, we add the number of tens it contains to the next column, and only ſet down the number of units that are over. In like manner we carry the tens of every column to the next higher. And the reaſon of this is obvious from the value of the places; ſince an unit, in any higher places, ſignifies the ſame thing as ten in the place immediately lower.

Addition.

Rule. "Write the numbers diſtinctly, "units under units, tens under tens; and "ſo on. Then reckon the amount of the "right-hand column. If it be under ten, "mark it down. If it exceed ten, mark "the units only, and carry the tens to the "next place. In like manner, carry the "tens of each column to the next, and mark "down the full ſum of the left-hand co-"lumn."

Example.

346863
876734
123467
314213
712316
438987
279654
3092234

As it is of great conſequence in buſineſs to perform addition readily and exactly, the learner ought to practice it till it become quite familiar. If the learner can readily add any two digits, he will ſoon add a digit to a higher number with equal eaſe. It is only to add the unite place of that number to the digit; and, if it exceed ten, it raiſes the amount accordingly. Thus, becauſe 8 and 6 is 14, 48 and 6 is 54. It will be proper to mark down under the ſums of each column, in a ſmall hand, the figure that is carried to the next column. This prevents the trouble of going over the whole operation again, in caſe of interruption or miſtake. If you want to keep the account clean, mark down the ſum and figure you carry on a ſeparate paper, and, after reviſing them, tranſcribe the ſum only. After ſome practice, we ought to acquire the habit of adding two or more figures at one glance. This is particularly uſeful when two figures which amount to 10, as 6 and 4, or 7 and 3, ſtand together in the column.

Every operation in arithmetic ought to be reviſed, to prevent miſtakes; and as one is apt to fall into the ſame miſtake, if he reviſe it in the ſame manner he performed it, it is proper either to alter the order, or elſe to trace back the ſteps by which the operation advanced, which will lead us at laſt to the number we began with. Every method of proving accounts may be referred to one or other of theſe heads.

1ſt, Addition may be proven by any of the following methods: Repeat the operation, beginning at the top of the column, if you began at the foot when you wrought it.

2d, Divide the account into ſeveral parts; add theſe ſeparately, and then add the ſums together. If their amount correſpond with the ſum of the account, when added at once, it may be preſumed right. This method is particularly proper when you want to know the ſums of the parts, as well as that of the whole.

3d, Subtract the numbers ſucceſſively from the ſum; if the account be right, you will exhauſt it exactly, and find no remainder.

When

Addition.

When the given number conſiſts of articles of different value, as pounds, ſhillings, and pence, or the like, which are called *different denominations*, the operations in arithmetic muſt be regulated by the value of the articles. We ſhall give here a few of the moſt uſeful tables for the learner's information.

I. *Sterling Money.*	II. *Avoirdupois Weight.*
4 Farthings=1 penny, *marked* d.	16 Drams=1 ounce, oz.
12 Pence=1 ſhilling, s.	16 Ounces=1 pound, lb.
20 Shillings=1 pound, L.	28 Pounds=1 quarter, qr.
Alſo, 6s. 8d.=1 noble	4 Quart.=1 hun. wght, C.
12s.=1 angel	20 Hun. weight=1 ton, T.
13s. 4d. or two thirds of a pound=1 merk.	

Scots money is divided in the ſame manner as ſterling, and has one twelfth of its value. A pound Scots is equal to 1s. 8d. ſterling, a ſhilling Scots to a penny ſterling, and a penny Scots to a twelfth part of a penny ſterling; a mark Scots is two thirds of a pound Scots, or 13⅓d. ſterling.

III. *Troy Weight.*	IV. *Apothecaries Weight.*
20 Mites=1 grain, gr.	20 Grains=1 ſcruple, ℈
24 Grains=1 Pen. wt, dwt.	3 Scruples=1 dram, ʒ
20 Penny wts=1 ounce, oz.	8 Drams=1 ounce, ℥
12 Ounces=1 pound, lib.	12 Ounces=1 pound, lb

V. *Engliſh Dry Meaſure.*	VI. *Scots Dry Meaſure.*
2 Pints=1 quart	4 Lippies=1 peck
4 Quarts=1 gallon	4 Pecks=1 firlot
2 Gallons=1 peck	4 Firlots=1 boll
4 Pecks=1 buſhel	16 Bolls=1 chalder
8 Buſhels=1 quarter	

VII. *Engliſh Land Meaſure.*	VIII. *Scots Land Meaſure.*
30¼ Square yards=1 pole or perch	36 Square ells=1 fall
40 Poles=1 rood	40 Falls=1 rood
4 Roods=1 acre	4 Roods=1 acre

IX. *Long Meaſure.*	X. *Time.*
12 Inches=1 foot	60 Seconds=1 minute
3 Feet=1 yard	60 Minutes=1 hour
5½ Yards=1 pole	24 Hours=1 day
40 Poles=1 furlong	7 Days=1 week
8 Furlongs=1 mile	365 Days=1 year
3 Miles=1 league	52 Weeks & 1 day=1 year

Rule *for Compound Addition.* "Arrange like quan-"tities under like, and carry according to the value "of the higher place."

Note 1. When you add a denomination, which contains more columns than one, and from which you carry to the higher by 20, 30, or any even number of tens, firſt add the units of that column, and mark down their ſum, carrying the tens to the next column; then add the tens, and carry to the higher denomination, by the number of tens that it contains of the lower. For example, in adding ſhillings, carry by 10 from the units to the tens, and by 2 from the tens to the pounds.

Note 2. If you do not carry by an even number of tens, firſt find the complete ſum of the lower denomination, then inquire how many of the higher that ſum contains, and carry accordingly, and mark the remainder, if any, under the column. For example, if the ſum of a column of pence is 43, which is three ſhillings and ſeven pence, mark 7 under the pence column, and carry 3 to that of the ſhillings.

Note 3. Some add the lower denominations after the following method: when they have reckoned as many as amounts to one of the higher denomination, or upwards, they mark a dot, and begin again with the exceſs of the number reckoned above the value of the denomination. The number of dots ſhows how many are carried, and the laſt reckoned number is placed under the column.

Examples in Sterling Money.

L.				L.		
145	6	8		16	9	11½
215	3	9		169	16	10
172	18	4		36	12	9¼
645	7	7		54	7	6
737	2	3		3	–	1½
35	3	9		7	19	6
9	–	7		707	19	11
1764	12	3		14	14	4
780	–	–		84	18	8½
99	9	9		125	3	7
150	10	–		16	16	8½
844	9	7		62	5	3

In Avoirdupois Weight.

T.	C.	qr.	lb.	T.	C.	qr.	lb.
1	19	3	26	3	15	2	24
–	14	1	16	6	3	–	19
2	18	1	16	5	7	3	26
–	1	2	27	3	2	–	–
3	1	–	10	4	3	1	10
–	17	2	24	–	18	1	12
–	15	3	18	1	1	1	1
4	6	–	5	5	3	–	7
–	6	3	9	6	4	–	9
6	4	–	4	4	6	–	5
5	5	–	5	2	1	3	4

When one page will not contain the whole account, we add the articles it contains, and write againſt their ſum *Carried forward*; and we begin the next page with the ſum of the foregoing, writing againſt it, *Brought forward.*

When the articles fill ſeveral pages, and their whole ſum is known, which is the caſe in tranſcribing accounts, it is beſt to proceed in the following manner: Add the pages, placing the ſums on a ſeparate paper; then add the ſums, and if the amount of the whole be right, it only remains to find what number ſhould be placed at the foot and top of the pages. For this purpoſe, repeat the ſum of the firſt page on the ſame line; add the ſums of the firſt and ſecond, placing the amount in a line with the ſecond; to this add the ſum of the third, placing the amount in a line with the third. Proceed in the like manner with the others; and if the laſt ſum correſponds with the amount of the page, it is right. Theſe ſums are tranſcribed at the foot of the reſpective pages, and tops of the following ones.

Subtraction.

Examples.

L.			L.			L.			L.		
134	6	8	170	5	4	70	4	2	15	3	9
42	3	9	66	9	8	18	6	8	12	2	6
175	4	9	73	8	6	12	13	2	7	5	4
42	5	7	45	3	2	15	3	9	8	–	–
163	7	4	78	7	9	17	5	4	–	9	6
148	5	8	12	–	–	18	6	8	–	5	10
73	2	3									

L.				L.			L.		
1st Page,	L.	778	16	–	L.	778	16	–	
2d,		445	14	5		1224	10	5	
3d,		151	19	9		1376	10	2	
4th,		43	6	11		1419	17	1	
	L.	1419	17	1					

Then we tranſcribe 778l. 16s. at the foot of the firſt and top of the ſecond pages, 1224l. 10s. 5d. at the foot of the ſecond and top of third; and ſo on.

Chap. III. SUBTRACTION.

Subtraction is the operation by which we take a leſſer number from a greater, and find their difference. It is exactly oppoſite to addition, and is performed by learners in a like manner, beginning at the greater, and reckoning downwards the units of the leſſer. The greater is called the *minuend*, and the leſſer the *ſubtrahend*.

If any figure of the ſubtrahend be greater than the correſponding figure of the minuend, we add ten to that of the minuend, and having found and marked the difference, we add one to the next place of the ſubtrahend. This is called *borrowing ten*. The reaſon will appear, if we conſider that, when two numbers are equally increaſed by adding the ſame to both, their difference will not be altered. When we proceed as directed above, we add ten to the minuend, and we likewiſe add one to the higher place of the ſubtrahend, which is equal to ten of the lower place.

Rule. "Subtract units from units, tens from tens, "and ſo on. If any figure of the ſubtrahend be "greater than the correſponding one of the minuend, "borrow ten."

Example.	Minuend	173694	738641
	Subtrahend	21453	379235
	Remainder	152241	359406

To prove ſubſtraction, add the ſubtrahend and remainder together; if their ſum be equal to the minuend, the account is right.

Or ſubtract the remainder from the minuend. If the difference be equal to the ſubtrahend, the account is right.

Rule *for compound ſubtraction*. "Place like deno-"minations under like; and borrow, when neceſſary, "according to the value of the higher place."

Examples.

L.			*C.*	*qr.*	*lib.*	*A.*	*R.*	*F.*	*E.*
146	3	3	12	3	19	15	2	24	18
58	7	6	4	3	24	12	2	36	7
87	15	9	7	3	23	2	3	28	11

Note 1. The reaſon for borrowing is the ſame as in ſimple ſubtraction. Thus, in ſubtracting pence, we add 12 pence when neceſſary to the minuend, and at the next ſtep, we add one ſhilling to the ſubtrahend. Subtraction.

Note 2. When there are two places in the ſame denomination, if the next higher contain exactly ſo many tens, it is beſt to ſubtract the units firſt, borrowing ten when neceſſary; and then ſubtract the tens, borrowing, if there is occaſion, according to the number of tens in the higher denomination.

Note 3. If the value of the higher denomination be not an even number of tens, ſubtract the units and tens at once, borrowing according to the value of the higher denomination.

Note 4. Some chooſe to ſubtract the place in the ſubtrahend, when it exceeds that of the minuend, from the value of the higher denomination, and add the minuend to the difference. This is only a different order of proceeding, and gives the ſame anſwer.

Note 5. As cuſtom has eſtabliſhed the method of placing the ſubtrahend under the minuend, we follow it when there is no reaſon for doing otherwiſe; the minuend may be placed under the ſubtrahend with equal propriety; and the learner ſhould be able to work it either way, with equal readineſs, as this laſt is ſometimes more convenient; of which inſtances will occur afterwards.

Note 6. The learner ſhould alſo acquire the habit when two numbers are marked down, of placing ſuch a number under the leſſer, that, when added together, the ſum may be equal to the greater. The operation is the ſame as ſubtraction, though conceived in a different manner, and is uſeful in balancing accounts and on other occaſions.

It is often neceſſary to place the ſums in different columns, in order to exhibit a clear view of what is required. For inſtance, if the values of ſeveral parcels of goods are to be added, and each parcel conſiſts of ſeveral articles, the particular articles ſhould be placed in an inner column, and the ſum of each parcel extended to the outer column, and the total added there.

If any perſon be owing an account, and has made ſome partial payments, the payments muſt be placed in an inner column, and their ſum extended under that of the account in the outer column, and ſubſtracted there.

An example or two will make this plain.

1ſt.] 30 yards linen at 2s. L. 3
45 ditto at 1s. 6d. 3 7 6
L. 6 7 6

120lb. thread at 4s. L. 24
40 ditto at 3s. 6
30 ditto at 2s. 6d. 3 15
33 15
L. 40 2 6

2d.] 1773.
Jan. 15. Lent James Smith L. 50
22. Lent him further 70
L. 120
Feb. 3. Received in part L. 62
5. Received further
In gold L. 10 10
In ſilver 13
23 10
85 10
Balance due me L. 34 10

Chap.

Multiplication.

10

Chap. IV. MULTIPLICATION.

In multiplication, two numbers are given, and it is required to find how much the firſt amounts to, when reckoned as many times as there are units in the ſecond. Thus, 8 multiplied by 5, or 5 times 8, is 40. The given numbers (8 and 5) are called *factors*; the firſt (8) the *multiplicand*; the ſecond (5) the *multiplier*; and the amount (40) the *product*.

This operation is nothing elſe than addition of the ſame number ſeveral times repeated. If we mark 8 five times under each other, and add them, the ſum is 40: But, as this kind of addition is of frequent and extenſive uſe, in order to ſhorten the operation, we mark down the number only once, and conceive it to be repeated as often as there are units in the multiplier.

For this purpoſe, the learner muſt be thoroughly acquainted with the following multiplication table, which is compoſed by adding each digit twelve times.

Twice	Thrice	Four times	Five times	Six times	Seven times
1 is 2	1 is 3	1 is 4	1 is 5	1 is 6	1 is 7
2 4	2 6	2 8	2 10	2 12	2 14
3 6	3 9	3 12	3 15	3 18	3 21
4 8	4 12	4 16	4 20	4 24	4 28
5 10	5 15	5 20	5 25	5 30	5 35
6 12	6 18	6 24	6 30	6 36	6 42
7 14	7 21	7 28	7 35	7 42	7 49
8 16	8 24	8 32	8 40	8 48	8 56
9 18	9 27	9 36	9 45	9 54	9 63
10 20	10 30	10 40	10 50	10 60	10 70
11 22	11 33	11 44	11 55	11 66	11 77
12 24	12 36	12 48	12 60	12 72	12 84

Eight times	Nine times	Ten times	Eleven times	Twelve times
1 is 8	1 is 9	1 is 10	1 is 11	1 is 12
2 16	2 18	2 20	2 22	2 24
3 24	3 27	3 30	3 33	3 36
4 32	4 36	4 40	4 44	4 48
5 40	5 45	5 50	5 55	5 60
6 48	6 54	6 60	6 66	6 72
7 56	7 63	7 70	7 77	7 84
8 64	8 72	8 80	8 88	8 96
9 72	9 81	9 90	9 99	9 108
10 80	10 90	10 100	10 110	10 120
11 88	11 99	11 110	11 121	11 132
12 96	12 108	12 120	12 132	12 144

If both factors be under 12, the table exhibits the product at once. If the multiplier only be under 12, we begin at the unit place, and multiply the figures in their order, carrying the tens to the higher place, as in addition.

Ex. 76859 multiplied by 4, or 76859 added 4 times.

4	76859
	76859
307436	76859
	76859
	307436

If the mulitiplier be 10, we annex a cypher to the multiplicand. If the multiplier be 100, we annex two cyphers; and ſo on. The reaſon is obvious, from the uſe of cyphers in notation.

If the multiplier be any digit, with one or more cyphers on the right hand, we multiply by the figure, and annex an equal number of cyphers to the product. Thus, if it be required to multiply by 50, we firſt multiply by 5, and then annex a cypher. It is the ſame thing as to add the multiplicand 50 times, and this might be done by writing the account at large, dividing the column into 10 parts of 5 lines, finding the ſum of each part, and adding the ten ſums together.

If the multiplier conſiſt of ſeveral ſignificant figures, we multiply ſeparately by each, and add the products. It is the ſame as if we divided a long account of addition into parts correſponding to the figures of the multiplier.

Example. To multiply 7329 by 365.

7329	7329	7329	36645 = 5 times.
5	60	300	439740 = 60 times.
36645	439740	2198700	2198700 = 300 times.
			2675085 = 365 times.

It is obvious that 5 times the multiplicand added to 60 times, and to 300 times, the ſame muſt amount to the product required. In practice, we place the products at once under each other; and as the cyphers ariſing from the higher places of the multiplier are loſt in the addition, we omit them. Hence may be inferred the following

Rule. "Place the multiplier under the multiplicand, and multiply the latter ſucceſſively by the "ſignificant figures of the former; placing the right-"hand figure of each product under the figure of the "multiplier from which it ariſes; then add the pro-"duct."

Ex.				
	7329	42785	37846	9765
	365	91	235	784
	36645	42785	189230	37582
	43974	385065	113538	65562
	21987	3893435	75692	7516
	2675085		8893810	817793024

A number which cannot be produced by the multiplication of two others is called a *prime number*; as 3, 5, 7, 11, and many others.

A number which may be produced by the multiplication of two or more ſmaller ones, is called a *compoſite number*. For example, 27, which ariſes from the multiplication of 9 by 3; and theſe numbers (9 and 3) are called the *component parts* of 27.

Contractions and Varieties in Multiplication.

Firſt, If the multiplier be a compoſite number, we may multiply ſucceſſively by the component parts.

Ex. 7638 by 45 or 5 times 9	7638 1ſt,	5492 by 72
45	9 2d,	137300 by 56
38190	3d,	5641756 by 144
38552	687420 4th,	791856 by 54
	5 5th,	1663549 by 125
343710	6 6th,	3789912 by 54
	343710 7th,	520813 by 63

Becauſe the ſecond product is equal to five times the firſt, and the firſt is equal to nine times the multi-

Multiplication.

plicand, it is obvious that the second product must be five times nine, or forty-five times as great as the multiplicand.

Secondly, If the multiplier be 5, which is the half of 10, we may annex a cypher and divide by 2. If it be 25, which is the fourth part of 100, we may annex two cyphers, and divide by 4. Other contractions of the like kind will readily occur to the learner.

Thirdly, To multiply by 9, which is one less than 10, we may annex a cypher; and subtract the multiplicand from the number it composes. To multiply by 99,999, or any number of 9's, annex as many cyphers, and subtract the multiplicand. The reason is obvious; and a like rule may be found, though the unit place be different from 9.

Fourthly, Sometimes a line of the product is more easily obtained from a former line of the same than from the multiplicand.

Ex. 1st.]	1372	2d.]	1348
	84		36
	5488		8088
	10976		4044
	115248		48528

In the first example, instead of multiplying by 5, we may multiply 5480 by 2; and, in the second, instead of multiplying by 3, we may divide 8088 by 2.

Fifthly, Sometimes the product of two or more figures may be obtained at once, from the product of a figure already found.

Ex. 1st.]	14356	2d.]	3462321
	648		96484
	114848		13849284
	918784		166191408
	9302688		332382816
			334058579364

In the second example, we multiply first by 4; then, because 12 times 4 is 48, we multiply the first line of the product by 12, instead of multiplying separately by 8 and 4; lastly, Because twice 48 is 96, we multiply the second line of the product by 2, instead of multiplying separately by 6 and 9.

When we follow this method, we must be careful to place the right-hand figure of each product under the right-hand figure of that part of the multiplier which it is derived from.

It would answer equally well in all cases, to begin the work at the highest place of the multiplier; and contractions are sometimes obtained by following that order.

Ex. 1st.]	3125	or	3125	2d.]	32452
	642		642		52575
	18750		18750		162260
	12500		131250		811300
	6250		2006250		2433900
	2006250				1706163900

Multiplication.

It is a matter of indifference which of the factors be used as the multiplier; for 4 multiplied by 3 gives the same product as 3 multiplied by 4; and the like holds universally true. To illustrate this, we may mark three rows of points, four in each . . . .
row, placing the rows under each other; . . . .
and we shall also have four rows, con- . . . .
taining three points each, if we reckon the rows downwards.

Multiplication is proven by repeating the operation, using the multiplier for the multiplicand, and the multiplicand for the multiplier. It may also be proven by division, or by casting out the 9's; of which afterwards; and an account, wrought by any contraction, may be proven by performing the operation at large, or by a different contraction.

Compound Multiplication.

Rule I. "If the multiplier do not exceed 12, the "operation is performed at once, beginning at the "lowest place, and carrying according to the value of "the place."

[*Examples.*]	*Cwt.*	*qr.*	*lb.*	*A.*	*R.*	*P.*	*Lb.*	*oz.*	*dwt.*
L.	13	6	7	12	2	8	13	3	18	7	5	9
			9			5			6			12
L.	119	19	3	62	3	12	83	—	28	89	5	8

Rule II. "If the multiplier be a composite number, whose component parts do not exceed 12, multiply first by one of these parts, then multiply the "product by the other. Proceed in the same manner "if there be more than two."

Ex. 1st.] L. 15 3 8 by 32=8×4
8
L. 121 9 4=8 times.
4
L. 485 17 4=32 times.

2d.] L. 17 3 8 by 75=5×5×3
3
L. 51 11 —=3 times.
5
L. 257 15 —=15 times.
5
L. 1288 15 —=75 times.

Note 1. Although the component parts will answer in any order, it is best, when it can be done, to take them in such order as may clear off some of the lower places at the first multiplication, as is done in Ex. 2d.

Note 2. The operation may be proved, by taking the component parts in a different order, or dividing the multiplier in a different manner.

Rule III. "If the multiplier be a prime number, "multiply first by the composite number next lower, "then by the difference, and add the products."

L.

Multiplication.

L. 35 17 9 by 67 = 64 + 3
8 64 = 8 × 8

L. 287 2 – = 8 times.
8

L. 2296 16 – = 64 times.
107 13 3 = 3 times.

L. 2404 9 3 = 67 times.

Here becauſe 8 times 8 is 64, we multiply twice by 8, which gives 2296l. 16s. equal to 64 times the multiplicand; then we find the amount of 3 times the multiplicand, which is 107l. 13s. 3d.; and it is evident that theſe added, amount to 67, the multiplicand.

RULE IV. "If there be a compoſite number a little above the multiplier, we may multiply by that "number, and by the difference, and ſubtract the "ſecond product from the firſt."

L. 17 4 5 by 106 = 108 – 2
12 108 = 9 × 12

L. 206 13 –
9

L. 1859 17 – = 108 times.
34 8 10 = 2 times.

L. 1825 8 2 = 206 times.

Here we multiply by 12 and 9, the component parts of 108, and obtain a product of 1860l. 6s. equal to 108 times the multiplicand; and, as this is twice oftener than was required, we ſubtract the multiplicand doubled, and the remainder is the number ſought.

Example. 34l. 8s. 2½d. by 3466.

RULE V. "If the multiplier be large, multiply by "10, and multiply the product again by 10; by "which means you obtain an hundred times the given "number. If the multiplier exceed 1000, multiply "by 10 again; and continue it farther, if the multiplier require it; then multiply the given number "by the unit-place of the multiplier; the firſt product "by the ten-place, the ſecond product by the hundred-place; and ſo on. Add the products thus obtained together."

L. 34 8 2½ by 5 = L. 172 1 0½ = 5 times
10

10 times L. 344 2 1 by 6 = 2064 12 6 = 60 times
10

100 times L. 3441 – 10 by 4 = 13764 3 4 = 400 times
10

1000 times L. 34410 8 4 by 3 = 103231 5 – = 3000 times

L. 119232 9 0½ = 3466 times

The uſe of multiplication is to compute the amount of any number of equal articles, either in reſpect of meaſure, weight, value, or any other conſideration. The multiplicand expreſſes how much is to be reckoned for each article; and the multiplier expreſſes how many times that is to be reckoned. As the multiplier points out the number of articles to be added, it is always an abſtract number, and has no reference to any value or meaſure whatever. It is therefore quite improper to attempt the multiplication of ſhillings by ſhillings, or to conſider the multiplier as expreſſive of any denomination. The moſt common inſtances in which the practice of this operation is required, are, to find the amount of any number of parcels, to find the value of any number of articles, to find the weight or meaſure of a number of articles, &c.

Diviſion.

This computation, for changing any ſum of money, weight, or meaſure, into a different kind, is called REDUCTION. When the quantity given is expreſſed in different denominations, we reduce the higheſt to the next lower, and add thereto the given number of that denomination; and proceed in like manner till we have reduced it to the loweſt denomination.

Example. To reduce 46l. 13s. 8¾d. to farthings.

L. 46
20

920 ſhillings in L.46
13

933 ſhillings in L.46 13
12

11196 pence in L.46 13
8

11204 pence in L.46 13 8
4

44819 farthings in L.46 13 8¾

Or thus

L.46 13 8¾
20

933
12

11204
4

44819

It is eaſy to take in or add the higher denomination at the ſame time we multiply the lower.

CHAP. V. DIVISION.

IN diviſion, two numbers are given; and it is required to find how often the former contains the latter. Thus, it may be aſked how often 21 contains 7, and the anſwer is, exactly 3 times. The former given number (21) is called the *Dividend*; the latter (7) the *Diviſor*; and the number required (3) the *Quotient*. It frequently happens that the diviſion cannot be completed exactly without fractions. Thus it may be aſked, how often 8 is contained in 19? the anſwer is twice, and the remainder of 3.

This operation conſiſts in ſubtracting the diviſor from the dividend, and again from the remainder, as often as it can be done, and reckoning the number of ſubtractions; as,

21
7 firſt ſubtraction
14
7 ſecond ſubtraction
7
7 third ſubtraction.
0

19
8 firſt ſubtraction
11
8 ſecond ſubtraction
3 remainder.

As this operation, performed at large, would be very tedious, when the quotient is a high number, it is proper to ſhorten it by every convenient method; and, for this purpoſe, we may multiply the diviſor by any number whoſe product is not greater than the dividend, and ſo ſubtract it twice or thrice, or oftener, at the ſame time. The beſt way is to multiply it by the greateſt number, that does not raiſe the product too high, and that number is alſo the quotient. For example, to divide 45 by 7, we inquire what is the greateſt multiplier for 7, that does

not

Division. not give a product above 45; and we ſhall find that it is 6; and 6 times 7 is 42, which, ſubtracted from 45, leaves a remainder of 3. Therefore 7 may be ſubtracted 6 times from 45; or, which is the ſame thing, 45, divided by 7, gives a quotient of 6, and a remainder of 3.

If the diviſor do not exceed 12, we readily find the higheſt multiplier that can be uſed from the multiplication table. If it exceed 12, we may try any multiplier that we think will anſwer. If the product be greater than the dividend, the multiplier is too great; and if the remainder, after the product is ſubtracted from the dividend, be greater than the diviſor, the multiplier is too ſmall. In either of theſe caſes, we muſt try another. But the attentive learner, after ſome practice, will generally hit on the right multiplier at firſt.

If the diviſor be contained oftener than ten times in the dividend, the operation requires as many ſteps as there are figures in the quotient. For inſtance, if the quotient be greater than 100, but leſs than 1000, it requires 3 ſteps. We firſt inquire how many hundred times the diviſor is contained in the dividend, and ſubtract the amount of theſe hundreds. Then we inquire how often it is contained ten times in the remainder, and ſubtract the amount of theſe tens. Laſtly, We inquire how many ſingle times it is contained in the remainder. The method of proceeding will appear from the following example:

To divide 5936 by 8.

From	5936
Take	5600 = 700 times 8.
Rem.	336
From which take	320 = 40 times 8
Rem.	16
From which take	16 = 2 times 8
	0 742 times 8 in all.

It is obvious, that as often as 8 is contained in 59, ſo many hundred times it will be contained in 5900, or in 5936; and, as often as it is contained in 33, ſo many ten times it will be contained in 330, or in 356; and thus the higher places of the quotient will be obtained with equal eaſe as the lower. The operation might be performed by ſubtracting 8 continually from the dividend, which will lead to the ſame concluſion by a very tedious proceſs. After 700 ſubtractions, the remainder would be 336; after 40 more, it would be 16; and after 2 more, the dividend would be entirely exhauſted. In practice, we omit the cyphers, and proceed by the following

Rules. 1ſt, "Aſſume as many figures on the left "hand of the multiplier as contain the diviſor once "or oftener: find how many times they contain it, "and place the anſwer as the higheſt figure of the "quotient.

2d, "Multiply the diviſor by the figure you have "found, and place the product under the part of the "dividend from which it is obtained.

3d, "Subtract the product from the figures above it.

4th, "Bring down the next figure of the dividend "to the remainder, and divide the number it makes "up, as before."

Examples.] 1ſt. 8)5936(742 2d. 63)30114(748 Diviſor.

56..	252..
33	491
32	441
16	504
16	504
0	0

3d. 365)974932(2671 $\frac{17}{365}$

730...
2449
2190
2593
2555
382
365
Remainder 17

The numbers which we divide, as 59, 33, and 16, in the firſt example, are called *dividuals*.

It is uſual to mark a point under the figures of the dividend, as they are brought down, to prevent miſtakes.

If there be a remainder, the diviſion is completed by a vulgar fraction, whoſe numerator is the remainder, and its denominator the diviſor. Thus, in Ex. 3. the quotient is 2671, and the remainder 17; and the quotient completed is 2671 $\frac{17}{365}$.

A number which divides another without a remainder is ſaid to meaſure it; and the ſeveral numbers which meaſure another, are called its *aliquot parts*. Thus 2, 4, 6, 8, and 12, are aliquot parts of 24. As it is often uſeful to diſcover numbers which meaſure others, we may obſerve,

1ſt, Every number ending with an even figure, that is, with 2, 4, 6, 8, or 0, is meaſured by 2.

2d, Every number ending with 5, or 0, is meaſured by 5.

3d, Every number, whoſe figures, when added, amount to an even number of 3's or 9's, is meaſured by 3 or 9, reſpectively.

Contractions and Varieties in Diviſions.

Firſt, When the diviſor does not exceed 12, the whole computation may be performed without ſetting down any figures except the quotient.

Ex. 7)35868(5124 or 7)35868
5124

Secondly, When the diviſor is a compoſite number, and one of the component parts alſo meaſures the dividend, we may divide ſucceſſively by the component parts.

Ex. 1ſt.] 30114 by 63 2d.] 975 by 105 = 5 × 7 × 3

9)30114	5)975
7) 3346	3)195
Quotient 478	7) 65
	Quotient 9 $\frac{2}{7}$

This method might be alſo uſed, although the component parts of the diviſor do not meaſure the dividend; but the learner will not underſtand how to manage

Division. manage the remainder till he be acquainted with the doctrine of vulgar fractions.

Thirdly, When there are cyphers annexed to the divisor, cut them off, and cut off an equal number of figures from the dividend; annex these figures to the remainder. *Ex.* To divide 378643 by 5200.

52|00)3786|43(72$\frac{343}{5200}$.
364.

146
104

4243

The reason will appear by performing the operation at large, and comparing the steps.

To divide by 10, 100, 1000, or the like. Cut off as many figures on the right hand of the dividend as there are cyphers in the divisor. The figures which remain on the left hand compose the quotient, and the figures cut off compose the remainder.

Fourthly, When the divisor consists of several figures we may try them separately, by inquiring how often the first figure of the divisor is contained in the first figure of the dividend, and then considering whether the second and following figures of the divisor be contained as often in the corresponding ones of the dividend with the remainder (if any) prefixed. If not, we must begin again, and make trial of a lower number. When the remainder is nine, or upwards, we may be sure the division will hold through the lower places; and it is necessary to continue the trial farther.

Fifthly, We may make a table of the products of the divisor, multiplied by the nine digits, in order to discover more readily how often it is contained in each dividual. This is convenient when the dividend is very long, or when it is required to divide frequently by the same divisor.

73 by 2 = 146
3 = 219
4 = 292
5 = 365
6 = 438
7 = 511
8 = 584
9 = 657

73)53872694(737982
511.....

277
219

582
511

716
657

509
584

154
146

Rem. 8

Sixthly, To divide by 9, 99, 999, or any number of 9's, transcribe under the dividend part of the same, shifting the highest figure as many places to the right hand as there are 9's in the divisor. Transcribe it again, with the like change of place, as often as the length of the dividend admits; add these together, and cut off as many figures from the right hand of the sum as there are 9's in the divisor. The figures which remain on the left hand compose the quotient, and those cut off the remainder. Division.

If there be any carriage to the unit; place of the quotient, add the number carried likewise to the remainder, as in Ex. 2.; and if the figures cut off be all 9's, add 1 to the quotient, and there is no remainder.

Examples. 1st. 999)3241123 2d. 9995478525
3241 5478
32 54

3273|96 5533|57
Quotient 3273 and rem. 96. 1

Quotient 5533·58 rem.

3d. 999)476523
476

476|999
1

Quotient 477

To explain the reason of this, we must recollect, that whatever number of hundreds any dividend contains, it contains an equal number of 99's, together with an equal number of units. In Ex. 1. the dividend contains 3241 hundreds, and a remainder of 23. It therefore contains 3241 times 99, and also 3241, besides the remainder already mentioned.—Again, 3241 contains 32 hundreds, and a remainder of 51: it therefore contains 32 99's, and also 32, besides the remainder of 41. Consequently the dividend contains 99, altogether, 3241 times, and 32 times, that is, 3273 times, and the remainder consists of 23, 41, and 32, added, which makes 96.

As multiplication supplies the place of frequent additions, and division of frequent subtractions, they are only repetitions and contractions of the simple rules, and when compared together, their tendency is exactly opposite. As numbers, increased by addition, are diminished and brought back to their original quantity by subtraction; in like manner, numbers compounded by multiplication are reduced by division to the parts from which they were compounded. The multiplier shows how many additions are necessary to produce the number; and the quotient shows how many subtractions are necessary to exhaust it. It follows, that the product, divided by the multiplicand, will quote the multiplier; and because either factor may be assumed for the multiplicand, therefore the product divided by either factor, quotes the other. It follows, also, that the dividend is equal to the product of the divisor and quotient multiplied together; and hence these operations mutually prove each other.

To prove multiplication. Divide the product by either factor. If the operation be right, the quotient is the other factor, and there is no remainder.

To prove division. Multiply the divisor and quotient together; to the product add the remainder, if any; and, if the operation be right, it makes up the dividend. Otherwise divide the dividend (after subtracting the remainder, if any) by the quotient. If the operation be right, it will quote the divisor. The reason of all these rules may be collected from the last paragraph.

Compare

Compound Division.

22 Rule I. "When the dividend only consists of different denominations, divide the higher denomination, and reduce the remainder to the next lower, taking in (p. 629. Rule V.) the given number of that denomination, and continue the division."

Examples.

Divide L. 465 : 12 : 8 by 72.

L.	s.	d.	L.	s.	d.
72)465	12	8	(6	9	4
432					
33					
20					
72)672					
648					
24					
12					
72)296					
288					
8 Rem.					

Divide 345 cwt. 1q. 8lb. by 22.

Cwt.	q.	lb.	Cwt.	q.	lb.
22)345	1	8	(15	2	21
22					
125					
110					
15					
4					
22)61					
44					
17					
28					
144					
34					

Or we might divide by the component parts of 72, (as explained under *Thirdly*, p. 631).

22)484
44
44
44
0

Rule II. "When the divisor is in different denominations, reduce both divisor and dividend to the lowest denomination, and proceed as in simple division. The quotient is an abstract number."

To divide 38l. 13s. by 3l. 4s. 5d.

L.			L.		
3	4	5	38	13	
20			20		
64			773		
12			12		
773			)9276(		12 quote.
			773		
			1546		
			1546		
			0		

To divide 96 cwt. 1q. 20lb. by cwt. 2q. 8lb.

Cwt.	q.	lb.	Cwt.	q.	lb.
3	2	8	) 96	1	20
4			4		
14			385		
28			28		
120			3100		
28			770		
4|00(			108|00(		27 quote.

It is best not to reduce the terms lower than is necessary to render them equal. For instance, if each of them consists of an even number of sixpences, fourpences, or the like, we reduce them to sixpences, or fourpences, but not to pence.

The use of division is to find either of the factors by whose multiplication a given number is produced, when the other factor is given; and therefore is of two kinds, since either the multiplier or the multiplicand may be given. If the former be given, it discovers what that number is which is contained so many times in another. If the latter be given, it discovers how many times one number is contained in another. Thus, it answers the questions of an opposite kind to those mentioned under Rule IV. p. 629. as, To find the quantity of a single parcel or share; to find the value, weight, or measure, of a single article; to find how much work is done, provisions consumed, interest incurred, or the like, in a single day, &c.

The last use of division is a kind of reduction exactly opposite to that described under Rule V. p. 629. The manner of conducting and arranging it, when there are several denominations in the question, will appear from the following examples.

1. To reduce 15783 pence to pounds, sh. and pence.

	20	
12)15783(	1315(	65
12 ···	120 ·	
37	115	
36	100	
18	15	
12		
63		
60		
3		

Answer, 65l. 15s. 3d.

2. To reduce 174865 grs. to lb. oz. and dwt. Troy.

	20	12	
24)174865(	7286(	364(	30
168 ···	60 ··	36 ·	
68	128	04	
48	120		
206	86		
192	80		
145	6		
144			
1			

Anf. 38lb. 4oz. 6dwt. 1gr.

In the first example, we reduce 15783 pence to shillings, by dividing by 12, and obtain 1315 shillings, and a remainder of 3 pence. Then we reduce 1315 shillings to pounds, by dividing by 20, and obtain 65 pounds and a remainder of 15 shillings. The divisions might have been contracted.

In the practice of arithmetic, questions often occur which require both multiplication and division to resolve. This happens in reduction, when the higher denomination does not contain an exact number of the lower.

Rule *for mixed reduction.* "Reduce the given denomination by multiplication to some lower one, which is an aliquot part of both; then reduce that by division to the denomination required."

Ex. Reduce 31742l. to guineas.

31742	Here we multiply by 20, which reduces the pounds to shillings; and divide the product by 21, which reduces the shillings to guineas.
20	
21)634840(30230	
63 ····	
048	
42	
64	
63	
10	

Answer, 30230 guineas and 10 shillings.

Division. As Portugueſe money frequently paſſes here in payments, we ſhall give a table of the pieces, and their value.

A moidore	= L.	1	7	–
A half moidore	=	–	13	6
A quarter moidore	=	–	6	9
A double Joannes	=	3	12	–
A Joannes	=	1	16	–
A half ditto	=	–	18	–
A quarter ditto	=	–	9	–
An eighth ditto	=	–	4	6

Note 1. Guineas may be reduced to pounds, by adding one-twentieth part of the number.

2. Pounds may be reduced to merks by adding one half.

3. Merks may be reduced to pounds by ſubtracting one-third.

4. Four moidores are equal to three Joannes: wherefore moidores may be reduced to Joannes, by ſubtracting one-fourth; and Joannes to moidores, by adding one-third.

5. Five Joannes are equal to 9l. Hence it is eaſy to reduce Portugueſe money to ſterling.

Another caſe, which requires both multiplication and diviſion, is, when the value, weight, meaſure, or duration of any quantity is given, and the value, &c. of a different quantity required, we firſt find the value, &c. of a ſingle article by diviſion, and then the value, &c. of the quantity required, by multiplication.

Ex. If 3 yards coſt 15s. 9d. what will 7 yards coſt, at the ſame rate?

	s.	d.	
3)	15	9	Price of 3 yards.
	5	3	Price of 1 yard, by Rule IV. p. 629.
		7	
L.	1	16	9 Price of 7 yards (by par. *ult.* p. 632. col. 1.)

Many other inſtances might be adduced, where the operation, and the reaſon of it, are equally obvious. Theſe are generally, though unneceſſarily, referred to the rule of Proportion.

We ſhall now offer a general obſervation on all the operations in arithmetic. When a computation requires ſeveral ſteps, we obtain a juſt anſwer, whatever order we follow. Some arrangements may be preferable to others in point of eaſe, but all of them lead to the ſame concluſion. In addition, or ſubtraction, we may take the articles in any order, as is evident from the idea of number; or, we may collect them into ſeveral ſums, and add or ſubtract theſe, either ſeparately or together. When both the ſimple operations are required to be repeated, we may either complete one of them firſt, or may introduce them promiſcuouſly, and the compound operations admit of the ſame variety. When ſeveral numbers are to be multiplied together, we may take the factors in any order, or we may arrange them into ſeveral claſſes, find the product of each claſs, and then multiply the products together. When a number is to be divided by ſeveral others, we may take the diviſors in any order, or we may multiply them into each other, and divide by the product; or we may multiply them into ſeveral parcels, and divide by the products ſucceſſively. Laſtly, When multiplication and diviſion are both required, we may begin with either; and when both are repeatedly neceſſary, we may collect the multipliers into one product, and the diviſors into another; or, we may collect them into parcels, or take them ſingly, and that in any order. So ſhall we obtain the proper anſwer, if none of the terms be neglected. Divisor.

When both multiplication and diviſion are neceſſary to obtain the anſwer of a queſtion, it is generally beſt to begin with the multiplication, as this order keeps the account as clear as poſſible from fractions. The example laſt given may be wrought accordingly as follows:

	s.	d.
	15	9
		7
3)	5	10 3
	1	16 9

Some accountants prove the operations of arithmetic by a method which they call caſting out the 9's, depending on the following principles:

Firſt, If ſeveral numbers be divided by any diviſor: (the remainders being always added to the next number), the ſum of the quotients, and the laſt remainder, will be the ſame as thoſe obtained when the ſum of the numbers is divided by the ſame diviſor. Thus, 19, 15, and 23, contain, together, as many 5's, as many 7's, &c. as their ſum 57 does, and the remainders are the ſame; and, in this way, addition may be proven by diviſion. It is from the correſpondence of the remainders, that the proof by caſting out the 9's, is deduced.

Secondly, If any figure with cyphers annexed, be divided by 9, the quotient conſiſts entirely of that figure; and the remainder is alſo the ſame. Thus, 40, divided by 9, quotes 4, remainder 4; and 400 divided by 9, quotes 44, remainder 4. The ſame holds with all the digits; and the reaſon will be eaſily underſtood: every digit, with a cypher annexed, contains exactly ſo many tens; it muſt therefore contain an equal number of 9's, beſides a remainder of an equal number of units.

Thirdly, If any number be divided by 9, the remainder is equal to the ſum of the figures of the number, or to the remainder obtained, when that ſum is divided by 9. For inſtance, 3765, divided by 9, leaves a remainder of 3; and the ſum of 3, 7, 6, and 5, is 21, which divided by 9, leaves a remainder of 3. The reaſon of this will appear from the following illuſtration:

3000	divided by 9 quotes	333;	remainder 3
700	quotes	77;	remainder 7
60	quotes	6;	remainder 6
5	quotes	0;	remainder 5
3765		416 Sum of rem.	21
Again: 21	divided by 9 quotes	2;	remainder 3

wherefore, 3765 divid. by 9 quotes 418; remainder 3; for the reaſon given. Hence we may collect the following rules for practice.

To caſt the 9's out of any number, or to find what remainder will be left when any number is divided by 9: Add the figures; and when the ſum exceeds 9, add the figures which would expreſs it. Paſs by the 9's; and, when the ſum comes exactly to 9, neglect it, and begin anew. For example, if it be required to caſt the 9's out of 3573294, we reckon thus: 3 and 5 is

Diviſion. 5 is 8, and 7 is 15; 1 and 5 is 6, and 3 is 9, which we neglect; 2 and (paſſing by 9) 4 is 6; which is the remainder or RESULT. If the article out of which the 9's are to be caſt contains more denominations than one, we caſt the 9's out of the higher, and multiply the reſult by the value of the lower, and carry on the product (caſting out the 9's, if neceſſary), to the lower.

To prove addition, caſt the 9's out of the ſeveral articles, carrying the reſults to the following articles; caſt them alſo out of the ſum. If the operation be right, the reſults will agree.

To prove ſubtraction, caſt the 9's out of the minuend; caſt them alſo out of the ſubtrahend and remainder together; and if you obtain the ſame reſult, the operation is preſumed right.

To prove multiplication, caſt the 9's out of the multiplicand, and alſo out of the multiplier, if above 9. Multiply the reſults together, and caſt the 9's, if neceſſary, out of their product. Then caſt the 9's out of the product, and obſerve if this reſult correſpond with the former.

Ex. 1ſt.] 9276 reſ. 6×8=48 reſ. 3.
8

74208 reſ. 3.
2d.] 7898 reſ. 5.×3=15 reſ. 6.
48 reſ. 3

63184
31592

379104 reſ. 6.

The reaſon of this will be evident, if we conſider multiplication under the view of repeated addition. In the firſt example it is obviouſly the ſame. In the ſecond, we may ſuppoſe the multiplicand repeated 48 times. If this be done, and the 9's caſt out, the reſult, at the end of the 9th line, will be 0; for any number, repeated 9 times, and divided by 9, leaves no remainder. The ſame muſt happen at the end of the 18th, 27th, 36th, and 45th lines; and the laſt reſult will be the ſame as if the multiplicand had only been repeated 3 times. This is the reaſon for caſting out the 9's from the multiplier as well as the multiplicand.

To prove diviſion, caſt the 9's out of the diviſor, and alſo out of the quotient; multiply the reſults, and caſt the 9's out of the product. If there be any remainder, add to it the reſult, caſting out the 9's, if neceſſary. If the account be right, the laſt reſult will agree with that obtained from the dividend.

Ex. 42) 2490 (59 reſ. 5×6=30 reſ. 3.
reſ. 6 210

390
378

Rem. 12 - - reſ. 3.

And the reſult of the dividend is 6

This depends on the ſame reaſon as the laſt; for the dividend is equal to the product of the diviſor and quotient added to the remainder.

We cannot recommend this method, as it lies under the following diſadvantages. Proportion.

Firſt, If an error of 9, or any of its multiples, be committed, the reſults will nevertheleſs agree; and ſo the error will remain undiſcovered. And this will always be the caſe, when a figure is placed or reckoned in a wrong column; which is one of the moſt frequent cauſes of error.

Secondly, When it appears by the diſagreement of the reſults, that an error has been committed, the particular figure or figures in which the error lies are not pointed out; and, conſequently, it is not eaſily corrected.

CHAP. VI. RULE OF PROPORTION.

SECT. I. SIMPLE PROPORTION.

QUANTITIES are reckoned proportional to each other, when they are connected in ſuch a manner, that if one of them be increaſed or diminiſhed, the other increaſes or diminiſhes at the ſame time; and the degree of the alteration on each is a like part of its original meaſure; thus four numbers are in the ſame proportion, the firſt to the ſecond as the third to the fourth, when the firſt contains the ſecond, or any part of it, as often as the third contains the fourth, or the like part of it. In either of theſe caſes, the quotient of the firſt, divided by the ſecond, is equal to that of the third divided by the fourth; and this quotient may be called the *meaſure of the proportion*. 13

Proportionals are marked down in the following manner:

6 : 3 :: 8 : 4
12 : 36 :: 9 : 27
9 : 6 :: 24 : 18
16 : 24 :: 10 : 15

The rule of Proportion directs us, when three numbers are given, how to find a fourth, to which the third may have the ſame proportion that the firſt has to the ſecond. It is ſometimes called the *Rule of Three*, from the three numbers given; and ſometimes the *Golden Rule*, from its various and extenſive utility.

RULE. "Multiply the ſecond and third terms toge- "ther, and divide the product by the firſt."

Ex. To find a fourth proportional to 18, 27, and 34.

18 : 27 :: 34 : 51
34

108
81

18)918(51
90

18
18

0

To explain the reaſon of this, we muſt obſerve that if two or more numbers be multiplied or divided alike, the products or quotients will have the ſame proportion.

18 : 26
Multiplied by 34, 312 : 918
Divided by 18, 34 : 51

The

Proportion.

The products 612, 918, and the quotients 34, 51, have therefore the same proportion to each other that 18 has to 27. In the course of this operation, the products of the first and third term are divided by the first; therefore the quotient is equal to the third.

The first and second terms must always be of the same kind; that is, either both monies, weights, measures, both abstract numbers, or the like. The fourth, or number sought, is of the same kind as the third.

When any of the terms is in more denominations than one, we may reduce them all to the lowest. But this is not always necessary. The first and second should not be reduced lower than directed p. 632, col. 1. par. *penult.*; and, when either the second or third is a simple number, the other, though in different denominations, may be multiplied without reduction.

Ex. 5 : 7 :: 25 11 3

7

L. s. d.

5) 178 18 9 (35 19 9

The accountant must consider the nature of every question, and observe the circumstance which the proportion depends on; and common sense will direct him to this if the terms of the question be understood. It is evident that the value, weight, and measure of any commodity is proportioned to its quantity; that the amount of work or consumption is proportioned to the time; that gain, loss, or interest, when the rate and time are fixed, is proportioned to the capital sum from which it arises; and that the effect produced by any cause is proportioned to the extent of the cause. In these, and many other cases, the proportion is direct, and the number sought increases or diminishes along with the term from which it is derived.

In some questions, the number sought becomes less, when the circumstances from which it is derived become greater. Thus, when the price of goods increases, the quantity which may be bought for a given sum is smaller. When the number of men employed at work is increased, the time in which they may complete it becomes shorter; and, when the activity of any cause is increased, the quantity necessary to produce a given effect is diminished. In these, and the like, the proportion is said to be inverse.

General Rule *for stating all questions, whether direct or inverse.* "Place that number for the third "term which signifies the same kind of thing with "what is sought, and consider whether the number "sought will be greater or less. If greater, place the "least of the other terms for the first; but, if less, "place the greatest for the first."

Ex. 1st] If 30 horses plough 12 acres, how many will 42 plough in the same time?

H. H. A.

30 : 42 :: 12

Here, because the thing sought is a number of acres, we place 12, the given number of acres, for the third term; and, because 42 horses will plough more than 12, we make the lesser number 30, the first term, and the greater number, 42, the second term.

Ex. 2d.] If 40 horses be maintained for a certain sum on hay, at 5d. per stone, how many will be maintained on the same sum when the price of hay is dearer, viz. 8d.

d. d. H.

8 : 5 :: 40

Here, because a number of horses is sought, we make the given number of horses, 40, the third term, and, because fewer will be maintained for the same money, when the price of hay is dearer, we make the greater price, 8d. the first term; and the lesser price 5d. the second term.

The first of these examples is direct, the second inverse. Every question consists of a supposition and demand. In the first, the supposition is, that 30 *horses plough* 12 *acres*, and the demand *how many* 42 *will plough?* and the first term of the proportion, 30, is found in the supposition, in this and every other direct question. In the second, the supposition is, *that* 40 *horses are maintained on hay at* 5*d.* and the demand, *how many will be maintained on hay at* 8*d.?* and the first term of the proportion, 8, is found in the demand, in this and every other inverse question.

When an account is stated, if the first and second term, or first and third, be measured by the same number, we may divide them by that measure, and use the quotients in their stead.

Ex. If 36 yards cost 42 shillings, what will 27 cost?

Y. Y. sh.

36 : 27 :: 42

4 : 3 :: 42

Here 36 and 27 are both measured by 9, and we work with the quotients 4 and 3.

s. d.

4)126(31 6

Sect. II. Compound Proportion. 14

Sometimes the proportion depends upon several circumstances. Thus, it may be asked, if 18 men consume 6 bolls corn in 28 days, how much will 24 men consume in 56 days? Here the quantity required depends partly on the number of men, partly on the time; and the question may be resolved into the two following ones:

1st, If 18 men consume 6 bolls, in a certain time, how many will 24 men consume in the same time?

M. M. B. B.

18 : 24 : 6 : 8

Answer, 24 men will consume 8 bolls in the same time.

6

18)444(8

2d, If a certain number of men consume 8 bolls in 28 days, how many will they consume in 56 days?

D. D. B. B.

28 : 56 :: 8 : 16

Ans. The same number of men will consume 16 bolls in 56 days.

8

28)448(16

In the course of this operation, the original number of bolls, 6, is first multiplied into 24, then divided by 18, then multiplied into 8, then divided by 28. It would answer the same purpose to collect the multipliers into one product, and the divisors into another; and then to multiply the given number of bolls by the former, and divide the product by the latter, p. 633. col. 1. par. *ult.*

The above question may therefore be stated and wrought as follows:

Proportion.

Men 18 : 24 :: 6 bolls
Days 28 : 56

144 144
36 120

504 1344
6

504)8064(16

Here we multiply 18 into 28 for a diviſor, and 6 into the product of 24 by 56, for a dividend.

"In general, ſtate the ſeveral particulars on which "the queſtion depends, as ſo many ſimple proportions, "attending to the ſenſe of the queſtion to diſcover "whether the proportions ſhould be ſtated directly or "inverſely; then multiply all the terms in the firſt "rank together, and all thoſe in the ſecond rank to-"gether; and work with the products as directed in "the ſimple rule (Sect. i. p. 634.)."

Example. If 100 men make 3 miles of road in 27 days, in how many days will 150 men make 5 miles?

Men 150 : 100 :: 27 days
Miles 3 5

450 500
27

450)13500(30 days, anſ.

Here the firſt ſtating is inverſe, becauſe more men will do it in fewer days; but the ſecond is direct, becauſe more miles will require more days.

The following contraction is often uſeful. After ſtating the proportion, if the ſame number occurs in both ranks, daſh it out from both; or, if any term in the firſt rank, and another in the ſecond rank are meaſured by the ſame numbers, daſh out the original terms, and uſe the quotients in their ſtead.

Ex. If 18 men conſume 30l. value of corn in 9 months, when the price is 16s. per boll, how many will conſume 54l. value in 6 months, when the price is 12s. per boll? In this queſtion, the proportion depends upon three particulars, the value of corn, the time and the price. The firſt of which is direct, becauſe the more the value of proviſions is, the more time is required to conſume them; but the ſecond and third are inverſe, for the greater the time and price is, fewer men will conſume an equal value.

Value 30 : 54 :: 18 men.
Months 6 : 9
Price 12 : 16
10 9
3 3
4

36
18

288
36

10)648(64⅘

Here we obſerve 6 in the firſt rank meaſures 54 in the ſecond: ſo we daſh them out, and place the quotient 9 in the ſecond rank. Next, becauſe 30 and 9 are both meaſured by 3, we daſh them out, and place down the quotients 10 and 3; then, becauſe 12 and 16 are both meaſured by 4, we daſh them out, and place down the quotients 3 and 4. Laſtly, Becauſe there is now 3 in both columns, we daſh them out, and work with the remaining terms, according to the rule.

The monies, weights, and meaſures of different countries, may be reduced from the proportion which they bear to each other.

Ex. If 112 lb. avoirdupois make 104 lb. of Holland, and 100 lb. of Holland make 89 of Geneva, and 110 of Geneva make 117 of Seville, how many lbs. of Seville will make 100lb. avoirdupois? Proportion.

112 : 104 :: 100
100 : 89
110 : 117

If it be required, how many lb. avoirdupois will make 100 of Seville, the terms would have been placed in the different columns thus:

104 : 112 :: 100
89 : 100
117 : 110

Sect. III. Distributive Proportion. 15

If it be required to divide a number into parts, which have the ſame proportion to each other, that ſeveral other given numbers have, we add theſe numbers together, and ſtate the following propoſition: As the ſum is to the particular numbers, ſo is the number required to be divided to the ſeveral parts ſought.

Ex. 1ſt.] Four partners engage to trade in company; A's ſtock is 150l. B's 320l. C's 350l. D's 500l.; and they gain 730l.: Required how much belongs to each, if the gain be divided among them in proportion to their ſtocks?

					Rem.
A's ſtock	L. 150	1320 : 150 :: 730 :	L. 82	19	1 — 120
B's	320	1320 : 320 :: 730 :	176	19	4 — 960
C's	350	1320 : 350 :: 730 :	193	11	2 — 720
D's	500	1320 : 500 :: 730 :	276	10	3 — 840
Wholeſtock	1320	Proof	L. 730		

This account is proved by adding the gains of the partners; the ſum of which will be equal to the whole gain, if the operation be right; but, if there be remainders, they muſt be added, their ſum divided by the common diviſor, and the quotient carried to the loweſt place.

Ex. 2d.] A bankrupt owes A 146l. B 170l. C 45l. D 480l. and E 72l.; his whole effects are only 342l. 7s. 6d. How much ſhould each have?

A's debt	L 146	913 : 146 ::	L. 342 7 6 :	L. 54 15	A's ſhare
B's	170	913 : 170 ::	342 7 6	63 15	B's
C's	45	913 : 45 ::	342 7 6	16 17 6	C's
D's	480	913 : 480 ::	342 7 6	180	D's
E's	72	913 : 72 ::	342 7 6	27	E's
	L. 913			L. 342 7 6	

This might alſo be calculated, by finding what compoſition the bankrupt was able to pay per pound; which is obtained by dividing the amount of his effects by the amount of his debts; and comes to 7s. 6d. and then finding by the rules of practice, how much each debt came to at that rate.

Chap. VII. RULES FOR PRACTICE. 16

The operations explained in the foregoing chapters comprehend the whole ſyſtem of arithmetic, and are ſufficient for every computation. In many caſes, however, the work may be contracted, by adverting to the particular circumſtances of the queſtion. We ſhall explain, in this chapter, the moſt uſeful methods which practice has ſuggeſted for rendering mercantile computations eaſy; in which the four elementary rules of arithmetic are ſometimes jointly, ſometimes ſeparately employed.

Sect. I. Computation of Prices. 17

The value of any number of articles, at a pound, a ſhilling,

Practice. shilling, or a penny, is an equal number of pounds, shillings, or pence; and these two last are easily reduced to pounds. The value, at any other rate, may be calculated by easy methods, depending on some contraction already explained, or on one or more of the following principles.

1st, If the rate be an aliquot part of a pound, a shilling, or a penny, then an exact number of articles may be bought for a pound, a shilling, or a penny; and the value is found by dividing the given number accordingly. Thus, to find the price of so many yards at 2s. 6d. which is the eighth part of a pound, we divide the quantity by eight, because every eight yards cost L. 1.

2d, If the rate be equal to the sum of two other rates which are easily calculated, the value may be found by computing these separately, and adding the sums obtained. Thus, the price of so many yards, at 9d. is found, by adding their prices, at 6d. and 3d. together.

3d, If the rate be equal to the difference of two easy rates, they may be calculated separately, and the lesser subtracted from the greater. Thus, the value of so many articles at 11d. is found, by subtracting their value at a penny from their value at a shilling. We may suppose that a shilling was paid for each article, and then a penny returned on each.

4th, If the rate be a composite number, the value may be found by calculating what it comes to at one of the component parts, and multiplying the same by the other.

Case I. "When the rate is an aliquot part of a "pound, divide the quantity by the number which "may be bought for a pound."

Table of the aliquot parts of L. 1.

10 shillings	$= \frac{1}{2}$ of L. 1.	1s. 4d.	$= \frac{1}{15}$ of L. 1.
6s. 8d.	$= \frac{1}{3}$	1s. 3d.	$= \frac{1}{16}$
5s.	$= \frac{1}{4}$	1s.	$= \frac{1}{20}$
4s.	$= \frac{1}{5}$	8d.	$= \frac{1}{30}$
3s. 4d.	$= \frac{1}{6}$	6d.	$= \frac{1}{40}$
2s. 6d.	$= \frac{1}{8}$	4d.	$= \frac{1}{60}$
2s.	$= \frac{1}{10}$	3d.	$= \frac{1}{80}$
1s. 8d.	$= \frac{1}{12}$	2d.	$= \frac{1}{120}$

Ex. 1st.] What is the value of 7463 yards, at 4s.?

5)7463

L. 1492 12s.

2d.] What is the value of 1773 yards, at 3d.?

8|0)1713

L. 22 3 3

In the first example we divide by 5 because 4s. is $\frac{1}{5}$ of a pound; the quotient 1492 shows how many pounds they amount to; besides which there remain three yards at 4s. and these come to 12s. In the second example, we divide by 80, as directed, and the quotient gives L. 22, and the remainder 13 yards, which at 3d. come to 3s. 3d.

This method can only be used in calculating for the particular prices specified in the table. The following 6 cases comprehend all possible rates, and will therefore exhibit different methods of solving the foregoing questions.

Case II. "When the rate consists of shillings only, "multiply the quantity by the number of shillings, "and divide the product by 20: Or, if the number "of shillings be even, multiply by half the number, "and divide the product by 10."

Ex. 1st] 4573 at 13s.

13

1719

4573

2)59449

L. 2972 9s.

2d.] 754 at 14s.

7

L. 528 2s.

The latter will easily perceive, that the method in which the second example is wrought, and gives the same answer as if the quantity had been multiplied by 14, and divided by 20; and as the division by 10 doubles the last figure for shillings, and continues all the rest unchanged for pounds, we may obtain the answer at once, by doubling the right hand figure of the product before we set it down.

If the rate be the sum of two or more aliquot parts of a pound, we may calculate those as directed in Case I. and add them. If it be any odd number of shillings, we may calculate for the even number next lower, and add thereto the value of a shilling. If it be 19s. we may subtract the value at a shilling, from the value at a pound.

Case III. "When the rate consists of pence only."

Method 1. If the rate be an aliquot part of a shilling, divide the quantity accordingly, which gives the answer in shillings; if not, it may be divided into two or more aliquot parts: calculate these separately, and add the values; reduce the answer to pounds.

1 penny is $\frac{1}{12}$ of a shilling.
2d. $\frac{1}{6}$ of ditto.
3d. $\frac{1}{4}$ of ditto.
4d. $\frac{1}{3}$ of ditto.
6d. $\frac{1}{2}$ of ditto.
5d. is the sum of 4d. and 1d. or of 2d. and 3d.
7d. is the sum of 4d. and 3d. or of 6d. and 1d.
8d is the sum of 6d. and 2d. or the double of 4d.
9d. is the sum of 6d. and 3d.
10d. is the sum of 6d. and 4d.
11d. is the sum of 6d. 3d. and 2d.

Ex. 1st] 7423 at 4d.

3)7423

20)2474 4

L. 123 14 4

Here, because 4d. is one third of a shilling, we divide by 3, which gives the price in shills. and reduce these by division to pounds.

2d.]9786 at 9d.

At 6d. $= \frac{1}{2}$ of 1s.	4893
At 3d. $= \frac{1}{2}$ of 6d.	2446 6
At 9d.	7339 6

L. 366 19 6

Here we suppose, that first 6d. and then 3d. is paid for each article; half the quantity is the number of shillings which they would cost at 6d. each. Half of that is the cost at 3d. and these added and reduced give the answer.

3d.]4856 at 11d

At 6d. $= \frac{1}{2}$ of 1s.	2428
At 3d. $= \frac{1}{2}$ of 6d.	1214
At 2d. $= \frac{1}{3}$ of 6d.	809 $\frac{4}{4}$
11d.	4451 4

L. 222 11 4

Here we calculate what the articles would cost at 6d. at 3d. and at 2d. and add the values.

It is sometimes easier to calculate at two rates, whose difference is the rate required, and subtract the lesser value from the greater. Thus, the last example may be wrought by subtracting the value at a penny from the value at a shilling. The remainder must be the value

Practice.

value at 11d.

At 1s.	48	5s.
At 1d.=1/12	4	0 4 8
At 11d.	44	5 1 4
L.	2	2 2 11 4

10d. may be wrought as the difference of 1s. and 2d.; and several other rates in like manner.

Meth. 2. *Multiply the quantity by the number of pence, the product is the answer in pence. Reduce it to pounds.*

Meth. 3. *Find the value at a penny by division, and multiply the same by the number of pence.*

Case IV. "When the rate consists of farthings only, to find the value in pence, and reduce it by division to pounds."

Ex. 1st.] 37843 at 1 farthing.

4)37843 farth.
12) 9460¾ pence
788 4¼
L. 39 8 4¾

3d. 72564 at ¼d.

3
4)217692 farth.
1) 54423 pence
4535 3
L. 226 15 3

2d.] 23754 at ½d.

2)23754 halfpence
12)11877 pence
989 9
L. 49 9 9

Or, 72564

At ¼d. 3682 d.
At ½d. 18141 d.
12)54423 d.
4535 3
L. 226 15 3

We may also find the amount in twopences, threepences, fourpences, or sixpences, by one division, and reduce these as directed in Case I.

Case V. "When the rate consists of pence and "farthings, find the value of the pence, as directed "in Case III. and that of the farthings from the pro"portion which they bear to the pounds. Add these "together, and reduce."

Ex. 1st] 3287 at 5¼.

At 4d.=1/3 of 1s.	1095	8
At 1d.=1/4 of 4d.	273	11
At 1f.=1/4 of 1d.	68	5¼
At 5¼	1438	¼
	L. 71	18 ¾

2d.] 4573 at 2¼d.

At 2d.=1/6 of 1s.	762	2
At ½d.=1/4 of 2d.	190	6½
At ¼d.=1/2 of ½d.	84	3¼
At 2¼	1037	11¼
	L. 51	17 11¼

3d.] 2842 at 3¼d.

At 3d.=1/4 of 1s.	710	6
At ¼.=1/4 of 3d.	176	7½
At 3¼	887	1½
	L. 44	8 1½

4th.] 3572 at 7¼d.

At 6d.=1/2 of 1s.	1386	
At 1¼d.=1/4 of 6d.	346	6
At 7¼	1732	6
	L. 87	12 6

It is sometimes best to join some of the pence with the farthings in the calculation. Thus, in Ex. 4. we reckon the value at 6d. and at 3 halfpence, which makes 7½d.

Practice.

If the rate be 1½, which is an eighth part of a shilling, the value is found in shillings, by dividing the quantity by 8.

Case VI. "When the rate consists of shillings and "lower denominations."

Method. 1. *Multiply the quantity by the shillings, and find the value of the pence and farthings, if any, from the proportion which they bear to the shillings. Add and reduce.*

Ex. 1st.] 4257 at 17s. 3d.

17

29806
4258

17s.	72386	
3d.=1/4 of 1s.	1064	6
17s. 3d.	73450	6
L.	3672	10 6

2d.] 5482 at 12s. 4½d.

12

12s.	65784	
3d.=1/4 of 1s.	1370	6
1½d.=1/2 of 3d.	685	3
12s. 4½d.	67839	9
L.	3391	19 9

Method. 2. *Divide the rate into aliquot parts of a pound; calculate the values corresponding to these, as directed in* Case I. *and add them.*

Ex. 1st.] 3894 at 17s. 6d.

10s. =1/2	L. 1947	
5s. =1/4	973	10
2s. 6d.=1/8	486	15
17s. 6d.	L. 3407	5

2d.] 1765 at 9s. 2d.

6s. 8d.=1/3	L. 588	6 8
2 6 =1/8	220	12 6
9s. 2d.	808	19 2

Sometimes part of the value is more readily obtained from a part already found; and sometimes it is easiest to calculate at a higher rate, and subtract the value at the difference.

3d.] 63790 at 5s. 4d.

4s. =1/5	L. 12758	
1s.4d.=1/3 of 4s.	4252	13 4
5s.4d.	L. 17010	13 4

4th.] 3664 at 14s. 9d.

10s.=1/2	L. 1832	
5s.=1/2 of 10s.	916	
15s.	2748	
3d.=1/60 of 5s.	45	16
14s. 9d.	L. 2702	4

Method 3. *If the price contain a composite number of pence, we may multiply the value at a penny by the component parts.*

Ex. 5628 at 2s. 11d. or 35d.

12)5628
20)469
L. 23 9
5
L. 117 5
7
L. 820 15

Case

Practice. CASE VII. "When the rate consists of pounds and "lower denominations."

Method 1. *Multiply by the pounds, and find the value of the other denominations from the proportion which they bear to the pounds.*

Ex. 1st.] 3592 at L.3 : 12 : 8.

3

10776

L.3		10776
12s.	$=\frac{1}{5}$ of L.3	2155 4
8d.	$=\frac{1}{3}$ of 12s.	119 14 8
L.3 12 8		L.13050 18 8

2d.] 543 at L.2 : 5 : $10\frac{1}{2}$.

2

1086

L.2		1086
5s.	$=\frac{1}{4}$ of L.1	135 15
10d.	$=\frac{1}{6}$ of 5s.	22 12 6
$\frac{1}{2}$d.	$=\frac{1}{20}$ of 10d.	1 1 $7\frac{1}{2}$
		L.1245 10 $1\frac{1}{2}$

Method 2. *Reduce the pounds to shillings, and proceed as in* Case VI.

Ex. 1st.] 3592 at L.3 : 12 : 8

72 20

7184 72

25144

258624 At 4s. 165735

4d. $=\frac{1}{5}$s. 1197 4 At 1d. $=\frac{1}{3}$s. 307 11

4d. $=\frac{1}{5}$s. 1197 4

44s. 11d. 165427 1

8d. 261018 8 L.8271 7 1

L.13050 18 8

2d.] 3683 at L.2 : 4 : 11

45

18415

24732

165735

The learner should at first try every calculation more ways than one; which will not only serve the purpose of proving the operation, but will render him expert at discovering the best method for solving each question, and will lead him to invent other methods; for we have not exhausted the subject.

Thus, if the number of articles be 20, each shilling of the rate makes a pound of the amount. If it be 12, each penny of the rate makes a shilling of the amount. If 240, each penny of the rate makes a pound of the amount. If 480, each halfpenny makes a pound. If 960, each farthing makes a pound. If the number of articles be a multiple, or an aliquot part of any of these, the amount is easily calculated. And if it be near to any such number, we may calculate for that number, and add or subtract for the difference.

We have hitherto explained the various methods of computation, when the quantity is a whole number, and in one denomination. It remains to give the proper directions when the quantity contains a fraction, or is expressed in several denominations.

When the quantity contains a fraction, work for the integers by the preceding rules, and for the fraction take porportional parts.

When the quantity is expressed by several denominations, and the rate given for the higher; calculate the higher, consider the lower ones as fractions, and work by the last rule.

When the rate is given for the lower denomination, reduce the higher denomination to the lower, and calculate accordingly.

Note 1st, 7 lb. 14 lb. and 21 lb. are aliquot parts of 1 qr.: and 16 lb. is $\frac{1}{7}$ of 1 cwt.; and are therefore easily calculated. Practice.

2d, If the price of a dozen be so many shillings, that of an article is as many pence; and if the price of a gross be so many shillings, that of a dozen is as many pence.

3d, If the price of a ton or score be so many pounds, that of 1 cwt. or a single article, is as many shillings.

4th, Though a fraction less than a farthing is of no consequence, and may be rejected, the learner must be careful lest he lose more than a farthing, by rejecting several remainders in the same calculation.

SECT. II. DEDUCTIONS ON WEIGHTS, &c.

The full weight of any merchandise, together with that of the cask, box, or other package, in which it is contained, is called the *gross weight*. From this we must make proper deductions, in order to discover the quantity for which price or duty should be charged, which is called the *nett weight*.

Tare is the allowance for the weight of the package; and this should be ascertained by weighing it before the goods are packed. Sometimes, however, particularly in payment of duty, it is customary to allow so much per C. or so much per 100 lb. in place of tare.

Tret is an allowance of 4lb. on 104 granted on currants, and other goods on which there is waste, in order that the weight may answer when the goods are retailed.

Cloff, or Draught, is a further allowance granted on some goods in London, of 2 lb. on every 3 C. to turn the scale in favour of the purchaser. The method of calculating these and the like will appear from the following examples.

Ex. 1st, What is the nett weight of 17 C. 2 q. 14lb. tare 18 lb. per cwt.

	C. q. lb.	*C. q. lb.*
	17 2 14 grofs.	or 17 2 14
		6
16lb. $=\frac{1}{7}$C.	2 2 2	
2lb. $=\frac{1}{8}$ of 16lb.	1 7	105 3 –
		3
18lb.	2 3 $9\frac{1}{2}$ tare	
		317 1
	14 3 $4\frac{1}{2}$ nett.	28)317$\frac{1}{2}$lb. *C. q. ll.*
		4) 11 $9\frac{1}{2}$(2 3 $9\frac{1}{2}$ tare

In the first method, we add the tare at 16lb. which is $\frac{1}{7}$ of the gross weight, to the tare, at 2 lb. which is $\frac{1}{8}$ of the former. In the second, we multiply the gross weight by 18; the tare is 1 lb. for each cwt. of the product, and is reduced by division to higher denominations.

2d.] What is tret of 158 C. 2 q. 24 lb.?

C. q. lb. *C. q. lb.*

26) 158 2 26 (6 – 11 Tret.

156

2

4

10

28

286

286

0

Because tret is always 4 lb. in 104, or 1 lb in 26, it is obtained by dividing by 26.

3d.]

Practice.

3d.] What is the cloſs on 28 C. 2 q.?

C.	q.
28	2
	2

3) 57 (19 lb.

This allowance being 2 lb. on every 3 C. might be found by taking $\frac{1}{3}$ of the number of C's and multiplying it by 2. It is better to begin with multiplication, for the reaſon given, p. 633. col. 2. par. 1.

19

Sect. III. Commission, &c.

It is frequently required to calculate allowances on ſums of money, at the rate of ſo many per 100l. Of this kind of Commission, or the allowance due to a factor for buying or ſelling goods, or tranſacting any other buſineſs; Premium of Insurance, or allowance given for engaging to repay one's loſſes at ſea, or otherwiſe; Exchange, or the allowance neceſſary to be added or ſubtracted for reducing the money of one place to that of another; Premiums on Stock, or the allowance given for any ſhare of a public ſtock above the original value. All theſe and others of a like kind are calculated by the following

Rule. "Multiply the ſum by the rate, and divide "the product by 100. If the rate contain a fraction, "take proportional parts."

Ex. What is the commiſſion on 728l. at $2\frac{1}{4}$ per cent?

	728
	2
2 per cent.	1456
$\frac{1}{2}$	364
$\frac{1}{4}$	182
	1|00)20|02
	20
	40
	12
	4|80
	4 Anſw. L.20—4¼
	3|20

When the rate is given in guineas, which is common in caſes of inſurance, you may add a twentieth part to the ſum before you calculate. Or you may calculate at an equal number of pounds, and add a twentieth part to the anſwer.

When the given ſum is an exact number of 10 pounds, the calculation may be done without ſetting down any figures. Every 10l. at $\frac{1}{4}$ per cent. is a ſhilling; and at other rates in proportion. Thus, 170l. at $\frac{1}{4}$ per cent. is 17s.; and, at $\frac{1}{4}$ per cent. 8s. 6d.

20

Sect. IV. Interest.

Intereſt is the allowance given for the uſe of money by the borrower to the lender. This is computed at ſo many pounds for each hundred lent for a year, and a like proportion for a greater or a leſs time. The higheſt rate is limited by our laws to 5 per cent. which is called the *legal intereſt*; and is due on all debts conſtituted by bond or bill, which are not paid at the proper term, and is always underſtood when no other rate is mentioned.

The intereſt of any ſum for a year, at any rate, is found by the method explained in the laſt ſection. Practice.

The intereſt of any number of pounds for a year, at 5 per cent. is one-twentieth part, or an equal number of ſhillings. Thus, the intereſt of 34675l. for a year is 34675 ſhillings.

The intereſt for a day is obtained by dividing the intereſt for a year, by the number of days in a year. Thus, the intereſt of 34675l. for a day is found by dividing 34675 ſhillings by 365, and comes to 95 ſhillings.

The intereſt for any number of days is obtained by multiplying the daily intereſt by the number of days. Thus the intereſt of 34675l. for 17 days, is 17 times 95 ſhillings or 1615 ſhillings; and this divided by 20, in order to reduce it, comes to 80l. 15s.

It would have ſerved the ſame purpoſe, and been eaſier, to multiply at firſt by 17, the number of days; and, inſtead of dividing ſeparately by 365, and by 20, to divide at once by 7300, the product of 365 multiplied by 20; and this diviſion may be facilitated by the table inſerted p. 631. col. 1.

The following practical rules may be inferred from the foregoing obſervations.

I. *To calculate intereſt at 5 per cent.* "Multiply the "principal by the number of days, and divide the pro-"duct by 7300."

II. *To calculate intereſt at any other rate.* "Find "what it comes to at 5 per cent. and take a proper pro-"portion of the ſame for the rate required."

Ex. 1ſt. Intereſt on 34675l. for 17 days, at 5 per cent.?

	34675	
	17	
	242725	
	34675	
	L.	s.
73|00)5894|75	(80	15
	584	
	5475	
	20	
	1095|00	
	73	
	365	
	365	
	0	

Ex. 2d. Intereſt on 304l. 3s. 4d. for 8 days, at 4 per cent.

L.	304	3	4	
			8	
			s.	d.
73|00)2433	6	8	(6	8
	20			
	486|66			
	438			
	4866			
	12			
	584|00			
	584			
	0			

Practice. Interest.

Int. at 5 per cent. L. — 6 8
Deduce $\frac{1}{5}$ — 1 4

Int. at 4 per cent. L. — 5 4

When partial payments are made, we proceed in the following manner: Let us suppose a bill of 170l. was due 12th August, that 54l. was paid on the 18th September, 56l. on the 17th October, and the balance on the 14th November; and let it be required to find how much interest is due.

		Days.		
Aug. 12.	L. 170	37	1190	
Sept. 18. pd.	54		510	
				6290
	116	29	1044	
Oct. 17. pd.	56		232	
				3364
	60	28		1680
Nov. 14. pd.	60			
	—		7300)	11334 (L. 1 : 11 : $\frac{1}{2}$.
	0			

Here we subtract the several payments from the original sum in their order, placing the dates in the margin; and from this it appears that there is interest due on 170l. from 12th August to 18th September, on 110l. from 18th September to 17th October, and on 60l. from 17th October to 14th November. We next compute the number of days in each of these periods, and mark it against the respective sum. Then we multiply each sum by the number of days; reserving a column, when necessary, for the products of the several figures in the multiplier. Lastly, We add these products, and divide their sum by 7300.

Interest on current accounts is calculated nearly in the same manner. For example, let the interest due on the following account be required to 31st July, at 4 per cent.

Dr. Mr A. Baird, his account current with W. Neil, Cr.

1775.			1775.		
Jan. 15.	To cash	L. 160	Mar. 22.	By cash	L. 50
Mar. 12.	To ditto	36	May 16.	By ditto	37
June 23.	To ditto	13 4 6	June 15.	By ditto	25 12 6
July 19.	To ditto	26 13 4	28.	By ditto	32 5 4

1775.		L.	s.	d.	Days			
Jan. 15.	Dr.	160			56	960		
Mar. 12.	Dr.	36			8	0		
							8960	Jan. 16
	Dr.	196			10		1960	Feb. 28
22.	Cr.	50						Mar. 31
								Apr. 30
	Dr.	146			55	73		May 31
May 16.	Cr.	37				730		June 30
							8030	July 31
	Dr.	109			30		3270	
June 15.	Cr.	25	12	6				Days 197
	Dr.	83	7	6	8		667	
23.	Dr.	13	5	6				
	Dr.	96	12		5		483	
28.	Cr.	3	5	4				
	Dr.	64	6	8	21	64		
July 19.	Dr.	26	13	4		1287		
							1351	
31.		91			12		1092	
					197	7300	25813	(L. 3 10 8½ at
						Deduce $\frac{1}{20}$ part		14 1½
						Interest at 4 per cent.		L. 3 15 7

Here the sums on either side of the account are introduced according to the order of their dates. Those on the Dr. side are added to the former balance, and those on the Cr. side subtracted. Before we calculate the days, we try if the last sum 91l. be equal to the balance of the account, which proves the additions and subtractions; and, before multiplying, we try if the sum of the column of days be equal to the number of days, from 15th January to 31st of July.

In the 5th and 6th multiplications, we begin at the pence column, and take in the carriage. In the 7th, instead of multiplying the 6s. 8d. by 21, we add the third part 21 to the product, because 6s. 8d. is the third of a pound. This is done by marking down the second line 1287, instead of 1280. As the computation on the odd shillings and pence is troublesome, and makes a very small increase of the interest, some neglect them altogether; others add one to the pound, when the shillings exceed 10, and neglect them when below it.

2d.] Required interest on the following account to 31st December, allowing 5 per cent. when the balance is due to J. T. and 4 per cent. when due to N. W.

Dr. Mr. J. T. his account current with N. W. Cr.

Dec. 31.	To balance	L. 150	April 9.	By cash	L. 70
Mar. 12.	To cash	120	May 12.	By cash	300
June 17.	To cash	165	June 3.	By cash	240
Sept. 24.	To cash	242	Aug. 2.	By cash	10
Oct. 9.	To cash	178			

1775.		L.		Days			
Dec. 31.	Dr.	150		71	150		
1776.					165		
Mar. 12.	Dr.	120				10650	
					2160		
	Dr.	270		28	540		
April 9.	Cr.	70				7560	
	Dr.	200		33		6600	
May 12.	Cr.	300					
	Cr.	100		22			2200
June 3.	Cr.	240					
	Cr.	340		14	1360		4760
17.	Dr.	165			340		
	Cr.	175		46	1050		8050
Aug. 2.	Cr.	10			700		
	Cr.	185		53	555		9805
Sept. 24.	Dr.	242			925		
	Dr.	57		15	285		
Oct. 9.	Dr.	178			57		
						855	
Dec. 31.	Dr.	235		83	705		
					1880		
				365		19505	
					7300	45170	24815

Interest due to N. W. at 5 per cent.	L.	6	8 9
Deduce $\frac{1}{5}$		1	5 9
Due to N. W. at 4 per cent.	L.	5	3 0
Due to J. T. at 5 per cent.		3	7 11½
Balance due to N. W.	L.	1	15 0½

Intereſt.

In this account, the balance is ſometimes due to the one party, ſometimes to the other. At the beginning, there is a balance due to N. W.; and, on the 9th of April there is 200l. due him. On the 12th of May, J. T. pays him 300l. which diſcharges what he owed, and leaves a balance of 100l. due him. The balance continues in J. T.'s favour till the 24th of September, when N. W. pays 242l. Theſe changes are diſtinguiſhed by the marks Dr. and Cr. The products are extended in different columns, and divided ſeparately.

When payments are made on conſtituted debts, at conſiderable diſtances of time, it is uſual to calculate the intereſt to the date of each payment, and add it to the principal, and then ſubtract the payment from the amount.

Ex. A bond for 540l. was due the 18th Aug. 1772; and there was paid 19th March 1773, 50l.; and 19th December 1773, 25l.; and 23d September 1774, 25l.; and 18th Auguſt 1775, 110l. Required the intereſt and balance due on the 11th November 1775?

A bond due 18th Auguſt 1772				L. 540		
Intereſt to 19th March 1773, 218 days	L. 16	2	6	16	2	6
				L. 556	2	6
Paid 19th March 1773				50		
Balance due 16th March 1773				L. 506	2	6
Intereſt to 19th December 1773, 272 days	19	1	2	19	1	2
				L. 525	3	8
Paid 19th December 1773				25		
Balance due 19th December 1773				L. 500	3	8
Intereſt to 23d September 1774, 278 days	19	0	9	19	0	9
				L. 519	4	5
Paid 23d September 1774				25		
Balance due 23d September 1774				L. 494	4	5
Intereſt to 18th Auguſt 1775, 329 days	22	5	3	22	5	3
				L. 516	9	8
Paid 18th Auguſt 1775				110		
Balance due 18th Auguſt 1775				L. 406	9	8
Intereſt to 11th November 1775, 85 days	4	14	6	4	14	6
Balance due 11th November 1775				L. 411	4	2
Amount of the intereſt	L. 81	4	2			

Chap. VIII. VULGAR FRACTIONS.

In order to underſtand the nature of vulgar fractions, we muſt ſuppoſe unity (or the number 1) divided into ſeveral equal parts. One or more of theſe parts is called a *fraction*, and is repreſented by placing one number in a ſmall character above a line, and another under it: For example, two fifth parts is written thus, $\frac{2}{5}$. The number under the line (5) ſhows how many parts unity is divided into, and is called the *denominator*. The number above the line (2) ſhows how many of theſe parts are repreſented, and is called the *numerator*.

It follows from the manner of repreſenting fractions, that, when the numerator is increaſed, the value of the fraction becomes greater; but, when the denominator is increaſed, the value becomes leſs. Hence we may infer, that, if the numerator and denominator be both increaſed, or both diminiſhed, in the ſame proportion, the value is not altered; and therefore, if we multiply both by any number whatever, or divide them by any number which meaſures both, we ſhall obtain other fractions of equal value. Thus, every fraction may be expreſſed in a variety of forms, which have all he ſame ſignification.

Vulgar Fractions.

A fraction annexed to an integer, or whole number, makes a mixed number. For example, five and two third-parts, or $5\frac{2}{3}$. A fraction whoſe numerator is greater than its denominator is called an *improper fraction*. For example, ſeventeen third-parts, or $\frac{17}{3}$. Fractions of this kind are greater than unity. Mixed numbers may be repreſented in the form of improper fractions, and improper fractions may be reduced to mixed numbers, and ſometimes to integers. As fractions whether proper or improper may be repreſented in different forms, we muſt explain the method of reducing them from one form to another, before we conſider the other operations.

Problem I. "To reduce mixed numbers to improper "fractions; "Multiply the integer by the denominator "of the fraction, and to the product add the numerator. "The ſum is the numerator of the improper fraction "ſought, and is placed above the given denominator."

Ex. $5\frac{2}{3} = \frac{17}{3}$

5 integer.
3 denominator.

15 product.
2 numerator given.

17 numerator ſought.

Becauſe one is equal to two halves, or 3 third-parts, or 4 quarters, and every integer is equal to twice as many halves, or four times as many quarters, and ſo on; therefore, every integer may be expreſſed in the form of an improper fraction, having an aſſigned denominator: The numerator is obtained by multiplying the integer into the denominator. Hence the reaſon of the foregoing rule is evident: 5, reduced to an improper fraction, whoſe denominator is 3, makes $\frac{15}{3}$, and this added to $\frac{2}{3}$ amounts to $\frac{17}{3}$.

Problem II. "To reduce improper fractions to "whole or mixed numbers: Divide the numerator by "the denominator."

Ex. $\frac{112}{17} = 6\frac{10}{17}$

17)112(6
102
10

1. $\frac{3248}{10}$
2. $\frac{3402}{315}$
3. $\frac{75536}{527}$
4. $\frac{157964}{3328}$
5. $\frac{3655}{135}$
6. $\frac{73904}{37}$
7. $\frac{864432}{5013}$
8. $\frac{431628}{2318}$

This problem is the converſe of the former, and the reaſon may be illuſtrated in the ſame manner.

Problem III. "To reduce fractions to lower terms: "Divide both numerator and denominator by any num- "ber which meaſures both, and place the quotients in "the form of a fraction."

Example. $\frac{135}{360} = \frac{27}{72} = \frac{3}{8}$

Here we obſerve that 135 and 360 are both meaſured by 5, and the quotients form $\frac{27}{72}$, which is a fraction of the ſame value as $\frac{135}{360}$ in lower terms. Again, 27 and 72 are both meaſured by 9, and the quotients form $\frac{3}{8}$, which is ſtill of equal value, and in lower terms.

It is generally ſufficient, in practice, to divide by ſuch meaſures as are found to anſwer on inſpection, or by the rules given p. 629. col. 2. But, if it be required to reduce a fraction to the loweſt poſſible terms, we muſt divide

Vulgar Fractions.

vide the numerator and denominator by the greateſt number which meaſures both. What number this is may not be obvious, but will always be found by the following rule.

To find the greateſt common meaſure of two numbers, divide the greater by the leſſer, and the diviſor by the remainder continually, till nothing remain; the laſt diviſor is the greateſt common meaſure.

Example. Required the greateſt number which meaſures 475 and 589?

```
475)589(1
    475
    ---
114)475(4
    456
    ---
 19)114(6
    114
    ---
      0
```

Here we divide 589 by 475, and the remainder is 114; then we divide 475 by 114, and the remainder is 19; then we divide 114 by 19, and there is no remainder: from which we infer, that 19, the laſt diviſor, is the greateſt common meaſure.

To explain the reaſon of this, we muſt obſerve, that any number which meaſures two others, will alſo meaſure their ſum, and their difference, and will meaſure any multiple of either. In the foregoing example, any number which meaſures 589, and 475, will meaſure their difference 114, and will meaſure 456, which is a multiple of 11; and any number which meaſures 475, and 456, will alſo meaſure their difference 19. Conſequently, no number greater than 19 can meaſure 589 and 475. Again, 19 will meaſure them both, for it meaſures 114, and therefore meaſures 456, which is a multiple of 114, and 475, which is juſt 19 more than 456; and, becauſe it meaſures 475 and 114, it will meaſure their ſum 589. To reduce $\frac{475}{589}$ to the loweſt poſſible terms, we divide both numbers by 19, and it comes to $\frac{25}{31}$.

If there be no common meaſure greater than 1, the fraction is already in the loweſt terms.

If the greateſt common meaſure of 3 numbers be required, we find the greateſt meaſure of the two firſt, and then the greateſt meaſure of that number, and the third. If there be more numbers, we proceed in the ſame manner.

Problem IV. "To reduce fractions to others of "equal value that have the ſame denominator: 1ſt, "Multiply the numerator of each fraction by all the "denominators except its own. The products are "numerators to the reſpective fractions ſought." "2d, Multiply all the denominators into each other; the product is the common denominator."

Ex. $\frac{4}{5}$ and $\frac{7}{8}$ and $\frac{3}{9}$ = $\frac{288}{360}$ and $\frac{280}{360}$ and $\frac{135}{360}$.

$4\times9\times8=288$ firſt numerator.
$7\times5\times8=280$ ſecond numerator.
$3\times5\times9=135$ third numerator.
$5\times9\times8=360$ common denominator.

Here we multiply 4, the numerator of the firſt fraction, by 9 and 3 the denominators of the two others; and the product 288 is the numerator of the fraction ſought, equivalent to the firſt. The other numerators are found in like manner, and the common denominator 360, is obtained by multiplying the given denominators 5, 9, 8, into each other. In the courſe of the whole operation, the numerators and denominators of each fraction are multiplied by the ſame number, and therefore their value is not altered.

The fractions thus obtained may be reduced to lower terms, if the ſeveral numerators and denominators have a common meaſure greater than unity. Or, after arranging the numbers for multiplication, as in the above, if the ſame number occur in each rank, we may daſh them out and neglect them; and if numbers which have a common meaſure occur in each, we may daſh them out and uſe the quotients in their ſtead; or any number which is a multiple of all the given denominators, may be uſed as a common denominator. Sometimes a number of this kind will occur on inſpection, and the new numerators are found by multiplying the given ones by the common denominator, and dividing the products by the reſpective given denominators.

If the articles given for any operation be mixed numbers, they are reduced to improper fractions by Problem I. If the anſwer obtained be an improper fraction, it is reduced to a mixed number by Problem II. And, it is convenient to reduce fractions to lower terms, when it can be done, by Problem III. which makes their value better apprehended, and facilitates any following operation. The reduction of fractions to the ſame denominator by Problem IV. is neceſſary to prepare them for addition or ſubtraction, but not for multiplication or diviſion.

1. Addition of Vulgar Fractions.

Rule. "Reduce them, if neceſſary, to a common "denominator; add the numerators, and place the "ſum above the denominator."

Ex. 1ſt.] $\frac{3}{4}+\frac{2}{3}=\frac{9}{12}+\frac{8}{12}$ by Problem IV. $=\frac{17}{12}$.

2d.] $\frac{5}{7}+\frac{8}{9}+1=\frac{405}{567}+\frac{504}{567}+\frac{567}{567}=\frac{1476}{567}$
By Problem II. $=2\frac{342}{567}$.

The numerators of fractions that have the ſame denominator ſignify like parts; and the reaſon for adding them is equally obvious, as that for adding ſhillings or any other inferior denomination.

Mixed numbers may be added, by annexing the ſum of the fractions to the ſum of the integers. If the former be a mixed number, its integer is added to the other integers.

2. Subtraction of Vulgar Fractions.

Rule. "Reduce the fractions to a common denomi-"nator; ſubtract the numerator of the ſubtrahend "from the numerator of the minuend, and place the "remainder above the denominator."

Ex. Subtract $\frac{3}{7}$ from $\frac{5}{8}$ remainder $\frac{11}{56}$.

$\left.\begin{matrix}\frac{5}{8}=\frac{35}{56}\\ \frac{3}{7}=\frac{24}{56}\end{matrix}\right\}$ by Prob. IV.

from 35
take 24
rem. 11.

To ſubtract a fraction from an integer: ſubtract the numerator from the denominator, and place the remainder above the denominator; prefix to this the integer diminiſhed by unity.

Ex. Subtract $\frac{3}{5}$ from 12. remainder $11\frac{2}{5}$.

To ſubtract mixed numbers, proceed with the fractions by the foregoing rule, and with the integers in the common method. If the numerator of the fraction in the ſubtrahend exceed that in the minuend, borrow the value of the denominator, and repay it by adding 1 to the unit place of the ſubtrahend.

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Ex. Subtract $145\frac{7}{9}$ from $248\frac{1}{5}$.

$\frac{1}{5}=\frac{27}{45}$, $\frac{7}{9}=\frac{35}{45}$ } by Prob. IV.

$248\frac{27}{45}$ — $145\frac{35}{45}$ — $102\frac{37}{45}$

Here, becauſe 27, the numerator of the fraction in the minuend, is leſs than 35, the numerator of the ſubtrahend, we borrow 45 the denominator; 27 and 45 make 72, from which we ſubtract 35, and obtain 37 for the numerator of the fraction in the remainder, and we repay what was borrowed, by adding 1 to 5 in the unit place of the ſubtrahend.

The reaſon of the operations in adding or ſubtracting fractions will be fully underſtood, if we place the numerators of the fractions in a column like a lower denomination, and add or ſubtract them as integers, carrying or borrowing according to the value of the higher denomination.

24 3. Multiplication of Vulgar Fractions.

Rule. "Multiply the numerators of the factors "together for the numerator of the product, and the "denominators together for the denominator of the "product."

Ex. 1ſt.] $\frac{2}{3}\times\frac{5}{7}=\frac{10}{21}$

$2\times5=10$ num.

$3\times7=21$ den.

2d.] $8\frac{1}{2}\times7\frac{1}{4}=\frac{17}{2}\times\frac{29}{4}=65\frac{3}{8}$

$8\frac{1}{2}=\frac{17}{2}$ by Prob. I.

$7\frac{1}{4}=\frac{29}{4}$ by ditto.

$17\times29=493$

$4\times2=8$

To multiply $\frac{5}{7}$ by $\frac{4}{3}$ is the ſame, as to find what two third parts of $\frac{5}{7}$ comes to; if one-third part only had been required, it would have been obtained by multiplying the denominator 7 by 3, becauſe the value of fractions is leſſened when their denominators are increaſed: and this comes to $\frac{5}{21}$; and, becauſe two thirds were required, we muſt double that fraction, which is done by multiplying the numerator by 2, and comes to $\frac{10}{21}$. Hence we infer, that fractions of fractions, or compound fractions, ſuch as $\frac{2}{7}$ of $\frac{3}{5}$ are reduced to ſimple ones by multiplication. The ſame method is followed when the compound fraction is expreſſed in three parts or more.

If a number be multiplied by any integer, its value is increaſed: If it be multiplied by 1, or taken one time, it undergoes no alteration. If it be multiplied by a proper fraction, or taken for one half, two thirds, or the like, its value is diminiſhed, and the product is leſs than the number multiplied.

The foregoing rule extends to every caſe, when there are fractions in either factor. For mixed numbers may be reduced to improper fractions, as is done in Ex. 2d.; and integers may be written, or underſtood to be written in the form of fractions whoſe numerator is 1. It will be convenient, however, to give ſome further directions for proceeding, when one of the factors is an integer, or when one or both are mixed numbers.

1ſt, To multiply an integer by a fraction, multiply it by the numerator, and divide the product by the denominator. *Ex.* $3756\times\frac{3}{4}=2253$

3

4)11268(2253

2d, To multiply an integer by a mixed number, we multiply it firſt by the integer, and then by the fraction, and add the products.

Ex. $138\times5\frac{3}{4}=793\frac{1}{2}$

$138\times5=690$

$138\times\frac{3}{4}$

3

4)414($103\frac{1}{2}$

$793\frac{1}{2}$

3d, To multiply a mixed number by a fraction, we may multiply the integer by the fraction, and the two fractions together, and add the products.

Ex. $15\frac{3}{8}\times\frac{2}{9}=3\frac{5}{12}$

$15\times\frac{2}{9}=3\frac{1}{9}=3\frac{4}{12}$

$\frac{3}{8}\times\frac{2}{9}=\frac{6}{72}=\frac{1}{12}$

$3\frac{5}{12}$

4th, When both factors are mixed numbers, we may multiply each part of the multiplicand firſt by the integer of the multiplier, and then by the fraction, and add the four products.

Ex. $8\frac{3}{5}$ by $7\frac{3}{4}$

$8\times7=56$

$8\times\frac{3}{4}=\frac{24}{4}=6$ by Prob. II.

$\frac{2}{5}\times7=\frac{14}{5}=2\frac{4}{5}$

$\frac{2}{5}\times\frac{3}{4}=\frac{6}{20}$

product $65\frac{2}{20}$ as before.

4. Division of Vulgar Fractions. 25

Rule I. "Multiply the numerator of the divi-"dend by the denominator of the diviſor. The pro-"duct is the numerator of the quotient."

II. "Multiply the denominator of the dividend by "the numerator of the diviſor. The product is the "denominator of the quotient."

Ex. Divide $\frac{2}{3}$ by $\frac{7}{9}$. Quotient $\frac{18}{35}$

$2\times9=18$

$5\times7=35$.

To explain the reaſon of this operation, let us ſuppoſe it required to divide $\frac{5}{7}$ by 7, or to take one ſeventh part of that fraction. This is obtained by multiplying the denominator by 7; for the value of fractions is diminiſhed by increaſing their denominators, and comes to $\frac{5}{49}$. Again, Becauſe $\frac{7}{9}$ is nine times leſs than ſeven, the quotient of any number divided by $\frac{7}{9}$ will be nine times greater than the quotient of the ſame number divided by 7. Therefore we multiply $\frac{5}{49}$ by 9, and obtain $\frac{45}{35}$.

If the diviſor and dividend have the ſame denominator, it is ſufficient to divide the numerators.

Ex. $\frac{12}{17}$ divided by $\frac{3}{17}$ quotes 4.

The quotient of any number divided by a proper fraction is greater than the dividend. It is obvious, that any integer contains more halves, more third parts and the like, than it contains units; and, if an integer and fraction be divided alike, the quotients will have the ſame proportion to the numbers divided; but the value of an integer is increaſed when the diviſor is a proper fraction; therefore, the value of a fraction in the like caſe is increaſed alſo.

The foregoing rule may be extended to every caſe, by reducing integers and mixed numbers to the form of improper fractions. We ſhall add ſome directions for ſhortening the operation when integers and mixed numbers are concerned.

1ſt, When the dividend is an integer, multiply it by

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by the denomination of the divisor, and divide the product by the numerator.

Ex. Divide 368 by $\frac{5}{7}$

7

5)2576(515$\frac{5}{5}$ quotient.

2d, When the divisor is an integer, and the dividend a fraction, multiply the denominator by the divisor, and place the product under the numerator.

Ex. Divide $\frac{1}{8}$ by 5 quotient $\frac{1}{40}$.

$8 \times 5 = 40$

3d, When the divisor is an integer, and the dividend a mixed number, divide the integer, and annex the fraction to the remainder; then reduce the mixed number, thus formed, to an improper fraction, and multiply its denominator by the divisor.

Ex. To divide 576 $\frac{4}{7}$ by 7 quotient $\frac{4}{7}$

7) 576 (82 — Here we divide 576 by 7, the quotient is 82, and the remainder 2, to which we annex the fraction $\frac{4}{7}$; and reduce $2\frac{4}{7}$ to an improper fraction $\frac{18}{7}$, and multiply its denominator by 7, which gives $\frac{18}{77}$.

56

16

14

$2\frac{4}{7} = \frac{18}{7}$

$11 \times 7 = 77$

Hitherto we have considered the fractions as abstract numbers, and laid down the necessary rules accordingly. We now proceed to apply these to practice. Shillings, and pence may be considered as fractions of pounds, and lower denominations of any kind as fractions of higher; and any operation, where different denominations occur, may be wrought by expressing the lower ones in the form of vulgar fractions, and proceeding by the foregoing rules. For this purpose the two following problems are necessary.

Problem V. "To reduce lower denominations to "fractions of higher, place the given number for the "numerator, and the value of the higher for the denominator." *Examples.*

1. Reduce 7d. to the fraction of a shilling. Anſ. $\frac{7}{12}$.
2. Reduce 7d. to a fraction of a pound. Anſ. $\frac{7}{240}$.
3. Reduce 15s. 7d. to a fraction of a pound. Anſ. $\frac{187}{240}$.

Problem VI. "To value fractions of higher denominations, multiply the numerator by the value of "the given denominator; and divide the product by "the denominator; if there be a remainder, multiply it by the value of the next denomination, and "continue the division."

Ex. 1st.] Required the value of $\frac{17}{20}$ of 1l.

17

20

60)340(5 8 *s. d.*

300

40

12

60)480

480

0

2d.] Required the value of $\frac{8}{9}$ of 1 cwt.

8

4

9)32(3 15$\frac{5}{9}$ *qrs. lb.*

27

5

28

9)140

9

50

45

5

In the first example, we multiply the numerator 17 by 20, the number of shillings in a pound, and divide the product 340 by 60, the denominator of the fraction, and obtain a quotient of 5 shillings; then we multiply the remainder 40 by 12, the number of pence in a shilling, which produces 480, which divided by 60 quotes 8d. without a remainder. In the second example we proceed in the same manner; but as there is a remainder, the quotient is completed by a fraction.

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Sometimes the value of the fraction does not amount to an unit of the lowest denomination; but it may be reduced to a fraction of that or any other denomination, by multiplying the numerator according to the value of the places. Thus $\frac{1}{1280}$ of a pound is equal to $\frac{12}{1280}$ of a shilling, or $\frac{144}{1280}$ of a penny, $\frac{576}{1280}$, or a farthing.

Chap. IX. DECIMAL FRACTIONS.

Sect. I. Notation *and* Reduction.

The arithmetic of vulgar fractions is tedious, and even intricate to beginners. The difficulty arises chiefly from the variety of denominations; for when numbers are divided into different kinds of parts, they cannot be easily compared. This consideration gave rise to the invention of decimal fractions, where the units are divided into like parts; and the divisions and subdivisions are regulated by the same scale which is used in the arithmetic of integers. The first figure of a decimal fraction signifies tenth parts, the next hundredth parts, the next thousandth parts, and so on: and the columns may be titled accordingly. Decimals are distinguished by a point, which separates them from integers, if any be prefixed.

The use of cyphers in decimals, as well as in intergers, is to bring the significant figures to their proper places, on which their value depends. As cyphers, when placed on the left hand of an integer, have no signification, but, when placed on the right hand, increase the value ten times each; so cyphers, when placed on the right hand of a decimal, have no signification; but, when placed on the left hand, diminish the value ten times each.

The notation and numeration of decimals will be obvious from the following examples;

4.7	signifies Four and seven-tenth parts.
.47	Four tenth parts, and seven hundredth parts, or 47 hundredth parts.
.047	Four hundredth parts, and seven thousandth parts, or 47 thousandth parts.
.407	Four tenth parts, and seven thousandth parts, or 407 thousandth parts.
4.07	Four, and seven hundredth parts.
4.007	Four, and seven thousandth parts.

The column next the decimal point is sometimes called *decimal primes*, the next *decimal seconds*; and so on.

To reduce vulgar fractions to decimal ones: "Annex "a cypher to the numerator, and divide it by the denominator, annexing a cypher continually to the remainder."

Ex.

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Ex. 1ſt.] $\frac{12}{75}$=.16

75)120(16
75
450
450
0

2d.] $\frac{5}{64}$=.078125

64)500(078125
448
520
512
80
64
160
128
320
320

3d.] $\frac{2}{3}$=.666.

3)20(666
18
*20
18
20
18
20

4th.] $\frac{5}{6}$=.833

6)50(83
48
*20
18
20
18
20

5th.] $\frac{7}{27}$=.259

27)70(259
54
160
135
250
243
*70

6th.] $\frac{7}{22}$=.3,18,18,

22)70(31818
66
*40
22
180
176
*40
22
180

The reaſon of this operation will be evident, if we conſider that the numerator of a vulgar fraction is underſtood to be divided by the denominator; and this diviſion is actually performed when it is reduced to a decimal.

In like manner, when there is a remainder left in diviſion, we may extend the quotient to a decimal, inſtead of completing it by a vulgar fraction, as in the following example:

25)646(25$\frac{21}{25}$ or 25.84.
50
146
125
Rem. 21.0
200
100
100
0

From the foregoing examples, we may diſtinguiſh the ſeveral kinds of decimals. Some vulgar fractions may be reduced exactly to decimals, as Ex. 1ſt and 2d, and are called *terminate* or *finite decimals*. Others cannot be exactly reduced, becauſe the diviſion always leaves a remainder; but, by continuing the diviſion, we will perceive how the decimal may be extended to any length whatever. Theſe are called *infinite decimals*. If the ſame figure continually returns, as in Ex. 3d and 4th, they are called *repeaters*. If two or more figures return in their order, they are called *circulates*. If this regular ſucceſſion go on from the beginning, they are called *pure repeaters*, or *circulates*, as Ex. 3d. and 5th. If otherwiſe, as Ex. 4th and 6 h, they are mixed repeaters or circulates, and the figures prefixed to thoſe in regular ſucceſſion are called the *finite part*. Repeating figures are generally diſtinguiſhed by a daſh, and circulates by a comma, or other mark, at the beginning and end of the circle; and the beginning of a repeater or circulate is pointed out in the diviſion by an aſteriſk.

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Lower denominations may be conſidered as fractions of higher ones, and reduced to decimals accordingly. We may proceed by the following rule, which is the ſame, in effect, as the former.

To reduce lower denominations to decimals of higher: "Annex a cypher to the lower denominations, and di- "vide it by the value of the higher. When there are "ſeveral denominations, begin at the loweſt, and reduce "them in their order."

Ex. To reduce 5 cwt. 2 qr. 21 lb. to a decimal of a ton?

28)210(.75
196
140
140
0

4)2.75(.6875
24
35
32
30
28
20
20
0

20)5.6874(.284375
40
168
160
87
80
75
60
150
140
100
100
0

Here, in order to reduce 21lb. to a decimal of 1qr. we annex a cypher, and divide by 28, the value of 1 qr. This gives .75. Then we reduce 2.75 qrs. to a decimal of 1 cwt. by dividing by 4, the value of 1 cwt. and it comes to .6875. Laſtly, 5.6875 cwt. is reduced to a decimal of a ton by dividing by 20, and comes to .284375.

To value a decimal fraction: "Multiply it by the "value of the denomination, and cut off as many de- "cimal places from the product as there are in the mul- "tiplicand. The reſt are integers of the lower deno- "mination."

Example. What is the value of .425 of L.1?

.425
20
ſh. 8.500
6
d. 3.000

Sect. II. Arithmetic of Terminate Decimals.

The value of decimal places decreaſes like that of integers, ten of the lower place in either being equal to one of the next higher; and the ſame holds in paſſing from decimals to integers. Therefore, all the operations are performed in the ſame way with decimals, whether

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whether placed by themſelves or annexed to integers, as with pure integers. The only peculiarity lies in the arrangement and pointing of the decimals.

In addition and ſubtraction, "Arrange units under "units, tenth parts under tenth parts, and proceed as "in integers."

32.035	from 13.348	and 12.248
116.374	take 9.2903	10.6752
160.63		
12.3645	4.0487	1.5728
321.4035		

In multiplication, "Allow as many decimal places "in the product as there are in both factors. If the "product has not ſo many places, ſupply them by "prefixing cyphers to the left hand."

Ex. 1ſt.] 1.37	2d.] 43.75	3d.] .1572
1.8	.48	.12
1096	35000	.018864
137	17500	
2.466	21.000	

The reaſon of this rule may be explained, by obſerving, that the value of the product depends on the value of the factors; and ſince each decimal place in either factor diminiſhes its value ten times, it muſt equally diminiſh the value of the product.

To multiply decimals by 10, move the decimal point one place to the right; to multiply by 100, 1000, or the like, move it as many places to the right as there are cyphers in the multiplier.

In diviſion, "Point the quotient ſo that there may "be an equal number of decimal places in the divi-"dend as in the diviſor and quotient together."

Therefore, if there be the ſame of decimal places in the diviſor and dividend, there will be as many in the quotient.

If there be more in the dividend, the quotient will have as many as the dividend has more than the diviſor.

If there be more in the diviſor, we muſt annex (or ſuppoſe annexed) as many cyphers to the dividend as may complete the number in the diviſor, and all the figures of the quotient are integers.

If the diviſion leave a remainder, the quotient may be extended to more decimal places; but theſe are not regarded in fixing the decimal point.

The reaſon for fixing the decimal point, as directed, may be inferred from the rule followed in multiplication. The quotient multiplied by the diviſor produces the dividend; and therefore the number of decimal places in the dividend is equal to thoſe in the diviſor and quotient together.

The firſt figure of the quotient is always at the ſame diſtance from the decimal point, and on the ſame ſide as the figure of the dividend, which ſtands above the unit place of the firſt product. This alſo takes place in integers; and the reaſon is the ſame in both.

It was formerly obſerved, that numbers were diminiſhed when multiplied by proper fractions, and increaſed when divided by the ſame. Thus, multiplication by fractions correſponds with diviſion by integers; and diviſion by fractions with multiplication by integers; when we multiply by $\frac{1}{2}$ or .5, we obtain the ſame anſwer as when we divide by 2, and every integer has a correſpondent decimal, which may be called its *reciprocal*. Multiplication by that decimal ſupplies the place of diviſion by the integer, and diviſion ſupplies the place of multiplication.

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To find the reciprocal of any number, divide 1 with cyphers annexed by that number.

Ex. Required the reciprocal of 625.

625)1.0000(.0016
625
3750
3750
0

The product of any number multiplied by .0016 is the ſame as the quotient divided by 625. *Example.*

625)9375(15
625
3125
3125
0

9375
.0016
56250
9375
15.0000

Becauſe .0016 is $\frac{1}{625}$ of unity, any number multiplied by that fraction will be diminiſhed 625 times. For a like reaſon, the quotient of any number divided by .0016, will be equal to the product of the ſame multiplied by 625. *Example.*

.1016)516.000(322500
48....
36
32
40
32
80
80
0

516
625
2580
1032
3096
322500

Sect. III. Approximate Decimals.

It has been ſhown that ſome decimals, though extended to any length, are never complete; and others, which terminate at laſt, ſometimes conſiſt of ſo many places, that it would be difficult in practice to extend them fully. In theſe caſes, we may extend the decimal to three, four, or more places, according to the nature of the articles, and the degree of accuracy required, and reject the reſt of it as inconſiderable. In this manner we may perform any operation with eaſe by the common rules, and the anſwers we obtain are ſufficiently exact for any purpoſe in buſineſs. Decimals thus reſtricted are called *approximates*.

Shillings, pence, and farthings, may be eaſily reduced to decimals of three places, by the following rule. Take half the ſhillings for the firſt decimal place, and the number of farthings increaſed by one, if it amount to 24 or upwards; by two, if it amount to 48 or upwards; and by three, if it amount to 72 or upwards, for the two next places.

The reaſon of this is, that 20 ſhillings make a pound, two ſhillings is the tenth part of a pound; and therefore

Decimal Fractions.

fore half the number of ſhillings makes the firſt decimal place. If there were 50 farthings in a ſhilling, or 1000 in a pound, the units of the farthings in the remainder would be thouſandth parts, and the tens would be hundredth parts, and ſo would give the two next decimal places; but becauſe there are only 48 farthings in a ſhilling, or 960 in a pound, every farthing is a little more than the thouſandth part of a pound; and ſince 24 farthings make 25 thouſandth parts, allowance is made for that exceſs by adding 1 for every 24 farthings, as directed.

If the number of farthings be 24, 48, or 72, and conſequently the ſecond and third decimal places 25, 50, and 75, they are exactly right; otherwiſe they are not quite complete, ſince there ſhould be an allowance of $\frac{1}{24}$, not only for 24, 48, and 72 farthings, but for every other ſingle farthing. They may be completed by the following rule: Multiply the ſecond and third decimal places, or their exceſs above 25, 50, 75, by 4. If the product amount to 24 or upwards, add 1; if 48, add 2; if 72, add 35. By this operation we obtain two decimal places more; and by continuing the ſame operation, we may extend the decimal till it terminate in 25, 50, 75, or in a repeater.

Decimals of ſterling money of three places may eaſily be reduced to ſhillings, pence, and farthings, by the following rule: Double the firſt decimal place, and if the ſecond be 5 or upwards, add 1 thereto for ſhillings. Then divide the ſecond and third decimal places, or their exceſs above 50, by 4, firſt deducing 1, if it amount to 25, or upwards; the quotient is pence, and the remainder farthings.

As this rule is the converſe of the former one, the reaſon of the one may be inferred from that of the other. The value obtained by it, unleſs the decimal terminate in 25, 50, or 75, is a little more than the true value; for there ſhould be a deduction, not only of 1 for 25, but a little deduction of $\frac{1}{25}$ on the remaining figures of theſe places.

We proceed to give ſome examples of the arithmetic of approximates, and ſubjoin any neceſſary obſervations.

ADDITION.

Cwt.	*qrs.*	*lb.*	
3	2	14	= 3.625
2	3	22	= 2.94642
3	3	19	= 3.91964
4	1	25	= 4.47321
14	3	24	14.96427

SUBTRACTION.

Cwt.	*qrs.*	*lb.*	
3	2	2	= 3.51785
1	1	19	= 1.41964
2	–	11	2.09821

If we value the ſum of the approximates, it will fall a little ſhort of the ſum of the articles, becauſe the decimals are not complete.

Some add 1 to the laſt decimal place of the approximate, when the following figure would have been 5, or upwards. Thus the full decimal of 3qrs. 22lb. is .946,428571, and therefore .94643 is nearer to it than .946,42. Approximates, thus regulated, will in general give exacter anſwers, and ſometimes above the true one, ſometimes below it.

The mark + ſignifies that the approximate is leſs than the exact decimal, or requires ſomething to be added. The mark — ſignifies that it is greater, or requires ſomething to be ſubtracted.

MULTIPLICATION.

Meth. 1ſt	*Meth.* 2d	*Meth.* 3d
8278 +	8278	8278
2153 +	2153	3512
24834	16556	16556
41390	827 | 8	827
8278	413 | 90	413
16556	24 | 834	24
1782|2534	1782|2534	1782

Here the four laſt places are quite uncertain. The right-hand figure of each particular product is obtained by multiplying 8 into the figures of the multiplier; but if the multiplicand had been extended, the carriage from the right-hand place would have been taken in; conſequently the right-hand place of each particular product, and the four places of the total product, which depend on theſe, are quite uncertain. Since part of the operation therefore is uſeleſs, we may omit it; and, for this purpoſe, it will be convenient to begin (as in p. 629. col. 1. *fifth* variety) at the higheſt place of the multiplier. We may perceive that all the figures on the right hand of the line in Meth. 2. ſerve no purpoſe, and may be left out, if we only multiply the figures of the multiplicand, whoſe products are placed on the right hand of the line. This is readily done by inverting the multiplier in Meth. 3. and beginning each product with the multiplication of that figure which ſtands above the figure of the multiplier that produces it, and including the carriage from the right-hand place.

If both factors be approximates, there are as many uncertain places, at leaſt in the product, as in the longeſt factor. If only one be an approximate, there are as many uncertain places as there are figures in that factor, and ſometimes a place or two more, which might be affected by the carriage. Hence we may infer, how far it is neceſſary to extend the approximates, in order to obtain the requiſite number of certain places in the product.

DIVISION.

.3724—	)79864327 + (.144 or $\frac{3724}{}$
7448	
538	)79864327(2144
372	7448
166	
148	
18	
14	
4	

Here all the figures on the right hand of the line are uncertain; for the right-hand figure of the firſt product 7448 might be altered by the carriage, if the diviſor were extended; and all the remainders and dividuals that follow are thereby rendered uncertain. We may omit theſe uſeleſs figures; for which purpoſe, we daſh a figure on the right hand of the diviſor at each ſtep, and neglect it when we multiply by the figure of the quotient next obtained; but we include the carriage. The operation, and the reaſon of it, will appear clear, by comparing the operation at large, and contracted, in the above example.

CHAP.

Interminate Decimals.

Chap. X. INTERMINATE DECIMALS.

Sect. I. Reduction of Interminate Decimals.

As the arithmetic of interminate decimals, otherwise called the *arithmetic of infinites*, is facilitated by comparing them with vulgar fractions, it will be proper to inquire what vulgar fractions produce the several kinds of decimals, terminate or interminate, repeaters or circulates, pure or mixed. And first, we may observe, that vulgar fractions, which have the same denominator, produce decimals of the same kind. If the decimals corresponding to the numerator 1 be known, all others are obtained by multiplying these into any given numerator, and always retain the same form, providing the vulgar fraction be in its lowest terms.

Thus, the decimal equal to $\frac{1}{7}$ is .142857,
which multiplied by 3

produces the decimal equal to $\frac{3}{7}$..428571,

Secondly, If there be cyphers annexed to the significant figures of the denominator, there will be an equal number of additional cyphers prefixed to the decimal. The reason of this will be evident, if we reduce these vulgar fractions to decimals, or if we consider that each cypher annexed to the denominator diminishes the value of the vulgar fraction ten times, and each cypher prefixed has a like effect on the value of the decimal.

Thus, $\frac{1}{7}$=.142857, $\frac{3}{25}$=.28 $\frac{1}{17}$=.0.45,
$\frac{1}{70}$=.0,142857, $\frac{2}{25}$=.0028 $\frac{1}{22}$=.000.45,

We may therefore confine our attention to vulgar fractions, whose numerator is 1, and which have no cyphers annexed to the significant figures of the denominator.

Thirdly, Vulgar fractions, whose denominators are 2 or 5, or any of their powers, produce terminate decimals; for if any power of 2 be multiplied by the same power of 5, the product is an equal power of 10, as appears from the following table:

2	× 5	=	10	
2^2 or 4	× 5^2 or	25=	100 or	10^2
2^3 or 8	× 5^3 or	125=	1000 or	10^3
2^4 or 16	× 5^4 or	625=	10000 or	10^4
2^5 or 32	× 5^5 or	3125=	100000 or	10^5

And the reason is easily pointed out; for $2^3 \times 5^3 = 2 \times 2 \times 2 \times 5 \times 5 \times 5$; or, because the factors may be taken in any order, $= 2 \times 5 \times 2 \times 5 \times 2 \times 5$; and this, if we multiply the factors by pairs, becomes $10 \times 10 \times 10$, or 10^3. The like may be shown of any other power. And we may infer, that if any power of 10 be divided by a like power of 2 or 5, the quotient will be an equal power of 5 or 2 respectively, and will come out exact, without a remainder; and, since the vulgar fractions above mentioned are reduced to decimals by some such division, it follows that the equivalent decimals are terminate.

The number of places in the decimal is pointed out by the exponent of the power; for the dividend must be a like power of 10, or must have an equal number of cyphers annexed to 1, and each cypher of the dividend gives a place of the quotient.

Ex. $\frac{1}{32}$=.03125, a decimal of 5 places, and $\frac{3}{32}=\frac{3}{5}$.

32)1.00000(.03125
96...
40
32
80
64
160
160

Interminate Decimals.

Again, No denominators except 2, 5, or their powers, produce terminate decimals. It is obvious from p. 631. col. 2. par. 4. that, if any denominator which produces a terminate decimal be multiplied thereby, the product will consist of 1, with cyphers annexed; and consequently the lowest places of the factors, multiplied into each other, must amount to 10, 20, or the like, in order to supply a cypher for the lowest place of the product; but none of the digits give a product of this kind, except 5 multiplied by the even numbers; therefore one of the factors must terminate in 5, and the other in an even number. The former is measured by 5, and the latter by 2, as was observed p. 630. col. 2. par. 7. Let them be divided accordingly, and let the quotients be multiplied. This last product will be exactly one-tenth part of the former; and therefore will consist of 1, with cyphers annexed, and the factors which produce it are measured by 5 and 2, as was shewn before. This operation may be repeated; and one of the factors may be divided by 5, and the other by 2, till they be exhausted; consequently they are powers of 5 and 2.

Fourthly, Vulgar fractions, whose denominators are 3 or 9, produce repeating decimals.

Thus, $\frac{1}{9}$ = .111 $\frac{5}{9}$ = .555
$\frac{2}{9}$ = .222 $\frac{3}{5}$ or $\frac{6}{10}$ = .666
$\frac{3}{9}$ or $\frac{1}{3}$ = .333 $\frac{7}{9}$ = .777
$\frac{4}{9}$ = .444 $\frac{8}{9}$ = .888

The repeating figure is always the same as the numerator. Hence we infer, that repeating figures signify ninth parts; a repeating 3 signifies $\frac{1}{3}$; a repeating 6 signifies $\frac{2}{3}$; and a repeating 9 signifies $\frac{9}{9}$, or 1.

The value of repeating decimals may also be illustrated by collecting the values of the different places: for example, let the value of .111 be required; the first decimal place signifies $\frac{1}{10}$, the next $\frac{1}{100}$, the next $\frac{1}{1000}$. The sum of the two first places is $\frac{11}{100}$, of the three places $\frac{111}{1000}$; and so on. If we subtract these values successively from $\frac{1}{9}$, the first remainder is $\frac{1}{900}$, the second $\frac{1}{9000}$, the third $\frac{1}{90000}$. Thus, when the value of the successive figures is reckoned, the amount of them approaches nearer and nearer to $\frac{1}{9}$, and the difference becomes 10 times less for each figure assumed: and, since the decimal may be extended to any length, the difference will at last become so small, that it need not be regarded. This may give a notion of a decreasing series, whose sum may be exactly ascertained, though the number of terms be unlimited.

Fifthly, Vulgar fractions, whose denominators are a product of 3 or 9 multiplied by 2, 5, or any of their powers, produce mixed repeaters. The reason of this will be evident, if, in forming the decimal, we divide the numerator successively by the component parts of the denominator, as directed p. 630. col. 1. par. 2d

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&c. The first divisor is 2, 5, or some of their powers, and consequently gives a finite quotient by p. 649. col. 1. par. 3. &c. The second divisor is 3 or 9; and therefore, when the figures of the dividend are exhausted, and figures annexed to the remainder, the quotient will repeat, by p. 649. col. 2. par. 2.

Ex. $\frac{1}{144}$ $144=16\times 9$.

	9
144(1.000(.00694	or 16)1.00(.0625
864	96.00694
1360	40
1296	32
* 640	80
576	80
640	0

In order to illustrate this subject further, we shall explain the operation of casting out the threes, which resembles that for casting out the nines, formerly laid down, p. 633. col. 2. par. 4.—p. 634. col. 2. par. 3. and depends on the same principles, being a method of finding the remainder of a number divided by 3. If the same number be divided by 3 and by 9, the remainders will either agree, or the second remainder will exceed the first by 3 or by 6. The reason of this will be obvious, if we suppose a collection of articles assorted into parcels of 3, and afterwards into parcels of 9, by joining three of the former together. If the lesser parcels be all taken up in composing the greater ones, the remainder will be the same at the end of the second assortment as before; but if one of these lesser parcels be left over, the remainder will be more, and if two of them be left over, the remainder will be 6 more. Therefore, when the nines are cast out from any number, and the result divided by 3, the remainder is the same as when the number is divided by 3: Thus, the results on casting out the 3's may be derived from those obtained by casting out the 9's; and the same correspondence which was pointed out with respect to the latter, for proving the operations of arithmetic, applies also to the former.

To cast out the 3's from any number, add the figures, neglecting 3, 6, or 9; and, when the sum amounts to 3, 6, or 9, reject them, and carry on the computation with the excess only. For example, take 286754: in casting out the 3's we compute thus; 2 and 8 is 10, which is three times 3, and 1 over; 1 and (passing by 6) 7 is 8, which is twice 3 and 2 over; 2 and 5 is 7, which is twice 3 and 1 over; *lastly*, 1 and 4 is 5, which contains 3 once, and 2 over, so the result is 2.

If the 3's be cast out from 2^2 or 4, the result is 1; from 2^3 or 8, the result is 2; from 2^4 or 16, the result is 1; and universally the odd powers of 2 give a result of 2, and the even powers give a result of 1. As every higher power is produced by multiplying the next lower by 2, the result of the product may be found by multiplying the result of the lower power by 2, and casting out the 3's if necessary. Therefore if the result of any power be 1, that of the next higher is 2, and that of the next higher (4 with the 3's cast out, or) 1. Thus the results of the powers of 2 are 1 and 2 by turns; also, because the result of 5, when the 3's are cast out, is 2, its powers will have the same results as the corresponding powers of 2.

Intermi-nate Decimals.

If the denominator be a product of an even power of 2 or 5, multiplied by 3, the repeating figure of the corresponding decimal is 3; but, if it be the product of an odd power, the repeating figure is 6. For, in forming the decimal, we may divide by the component parts of the denominator, and the first divisor is a power of 2 or 5; therefore the first quotient is a like power of 4 or 2 (p. 649. col. 1. par. 3. &c.) and this power is again divided by 3. If it be an even power, the remainder or result is 1, as was demonstrated above; and if cyphers be annexed to the remainder, and the division continued, it quotes a repeating 3; but if it be an odd power, the remainder is 2, and the quotient continued by annexing cyphers is a repeating 6.

If the denominator be 9, multiplied by 2, or any of its powers, the repeating figure may be found by casting out the 9's from the corresponding power, by 5; and if it be multiplied by 5, or any of its powers, by casting out the 9's from the corresponding power of 2. For if the decimal be formed by two divisions, the first quotes the corresponding power; and the second, because the divisor is 9, repeats the resulting figure after the dividend is exhausted.

If any mixed repeater be multiplied by 9, the product is a terminate decimal, and may be reduced (p. 649. col. 1. par. 3. &c.) to a vulgar fraction, whose denominator is 2, 5, or some of their powers; therefore all mixed repeaters are derived from vulgar fractions, whose denominators are products of 2, 5, or their powers, multiplied by 3 or 9.

Sixthly, All denominators, except 2, 5, 3, 9, the powers of 2 and 5, and the products of these powers, multiplied by 3 or 9, produce circulating decimals. We have already shown, that all terminate decimals are derived from 2, 5, or their powers; all pure repeaters, from 3 or 9; and all mixed repeaters, from the products of the former multiplied by the latter. The number of places in the circle is never greater than the denominator diminished by unity. Thus $\frac{1}{7}$ produces .142857, a decimal of 6 places; and $\frac{1}{17}$ produces .0588235294117647, a decimal of 16 places. The reason of this limit may be inferred from the division; for whenever a remainder which has recurred before, returns again, the decimal must circulate, and the greatest number of possible remainder is one less than the divisor: But frequently the circle is much shorter. Thus $\frac{1}{11}$=.09, a circle of 2 places.

When a vulgar fraction, whose numerator is 1, produces a pure circulate, the product of the circle multiplied by the denominator will consist of as many 9's as there are places in the circle. Thus $\frac{1}{7}$=.142857, which multiplied by 7 produces 999999. The like holds in every decimal of the same kind; for they are formed by dividing 10, or 100, or 1000, or some like number, by the denominator, and the remainder is 1, when the decimal begins to circulate; for the division must be then exactly in the same state as at the beginning: Therefore, if the dividend had been less by 1, or had consisted entirely of 9's, the division would have come out without a remainder; and since the quotient multiplied by the divisor, produces the dividend, as was shown p. 631. col. 2. par. 3. it follows, that the circulating figures, multiplied by the denominator, produce an equal number of 9's.

Every vulgar fraction, which produces a pure circulate,

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late, is equal to one whose numerator is the circulating figures, and its denominator a like number of 9's. If the numerator be 1, the vulgar fraction is reduced to that form by multiplying both terms into the circle of the decimal; and if the numerator be more than 1, the equivalent decimal is found by multiplying that which corresponds to the numerator 1 into any other numerator.

Thus $\frac{1}{7}=.142857$, $=\frac{4}{7}\frac{2}{9}\frac{8}{9}\frac{5}{9}\frac{7}{9}$ and $\frac{1}{37}=.027=\frac{3}{9}\frac{7}{9}$
$\frac{2}{7}=.285714$, $=\frac{5}{7}\frac{7}{9}\frac{1}{9}\frac{4}{9}$ $\frac{2}{37}=.054=\frac{5}{9}\frac{4}{9}$
$\frac{4}{7}=.428571$, $=\frac{8}{9}\frac{5}{9}\frac{7}{9}\frac{1}{9}$ $\frac{3}{37}=.216=\frac{2}{9}\frac{1}{9}\frac{6}{9}$

Hence we may infer, that pure circulates are equal in value to vulgar fractions whose numerators consist of the circulating figures, and denominators of as many 9's as there are places in the circle. To place this in another point of view, we shall reduce a vulgar fraction, whose numerator consists entirely of 9's, to a decimal.

$\frac{375}{999}$ 999(375000(.375,
2997
7530
6993
5370
4995
*375

The remainder is now the same as the dividend, and therefore the quotient must circulate; and, in general, since any number with 3 cyphers annexed, may be divided by 1000, without a remainder, and quotes the significant figures, therefore, when divided by 999, it must quote the same figures, and leave an equal remainder. This also applies to every divisor which consists entirely of 9's. Circles of two places, therefore, signify ninety-ninth parts; circles of 3 places, signify nine hundred and ninety-ninth parts; and so on.

The value of circulating decimals may also be illustrated by adding the values of the places. Thus, if two figures circulate, the first circle signifieth hundredth parts, and every following circle signifies one hundred times less than the preceding; and their values added, as in p. 649. col. 2. par. 3. will approach nearer to ninety-ninth parts than any assigned difference, but will never exactly complete it.

All denominators which are powers of 3, except 9, produce pure circulates; and the number of places in the circle is equal to the quotient of the denominator divided by 9.

Thus, $\frac{1}{27}=.037$, a circle of 3 places, and 27 divided by $9=3$

$\frac{1}{81}=.012345679$, a circle of 9 places, and 81 divided by $9=9$.

These decimals may be formed, by dividing the numerator by the component parts of the denominator. In the first example, the component parts of the numerator are 9 and 3. The division by 9 quotes a pure circulate, and the circulating figure is not 3, 6, or 9, if the vulgar fraction be in its lowest terms. And any other repeating figure divided by 3, quotes a pure circulate of 3 places; for the first dividual must leave a remainder of 1 or 2. If the first remainder be 1, the second remainder is 2, (because, if 1 be prefixed to the repeating figure, and the 3's be cast out, the result is 2.) and, for a like reason, the third dividual clears off without a remainder. If the first remainder be 2, the second is (twice 2 or 4, with the 3's cast out, or) 1, and the third 0; so the circle is always complete at 3 places, and the division begins anew. The sum of such a circle cannot be a multiple of 3; for since the repeating figure is not 3, nor any of its multiples, the sum of 3 places is not a multiple of 9, and therefore cannot be divided by 9, nor twice by 3, without a remainder.

Again, If the decimal equal to $\frac{1}{27}$ be divided by 3, we shall obtain the decimal equal to $\frac{1}{81}$. The dividend, as we have shown already, is a pure circulate of 3 places, whose sum is not a multiple of 3. Therefore, when divided by 3, the first circle leaves a remainder of 1 or 2, which being prefixed to the second, and the division continued, the remainder, at the end of the second circle, is 2 or 1, and, at the end of the third circle, there is no remainder; all which may be illustrated by casting out the 3's. The division being completed at 9 places, finishes the circle; and it may be shown, as before, that the sum of these places is not a multiple of 3. The learner will apprehend all this if he reduce these, or the like vulgar fractions, to decimals, by successive divisions.

$27 = 9\times3$, and 9)1.0(.111, and 3).111(.037,
$81 = 27\times3$, and 3)037 037.037(.012345679.

For the same reason, if any circulating decimal, not a multiple of 3, be divided by 3, the quotient will circulate thrice as many places as the dividend; and if any circulate obtained by such division be multiplied by 3, the circle of the product will be restricted to one-third of the places in the multiplicand.

All vulgar fractions, whose denominators are multiples of 2, 5, or their powers, except those already considered, produce mixed circulates; for they may be reduced by dividing by the component parts of the denominator. The first divisor is 2, 5, or some of their powers, and therefore gives a finite quotient. The second divisor is none of the numbers enumerated p. 650 col. 2. par. 2. and therefore gives a circulating quotient when the significant figures of the dividend are exhausted, and cyphers annexed to the remainder.

Ex. $\frac{1}{216}$
216)1.000(.004,629,
864
*1360
1296
640
432
2080
1944
*1360

$216=27\times8$,
or 8)1.000
27) .125(.004,629,
108
*170
162
80
54
260
243
17

All mixed circulates are derived from vulgar frac-

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tions of this kind, whose denominators are multiples of 2, 5, or their powers; and therefore all other denominators, except 3 and 9, produce pure circulates. The reader will easily perceive, that when a decimal is formed from a vulgar fraction, whose numerator is 1, when the remainder 1 occurs in the division the decimal is a pure circulate; but if any other remainder occurs twice, the decimal is a mixed circulate. We are to show that this last will never happen, unless the divisor be a multiple of 2, 5, or their powers. If two numbers be prime to each other, their product will be prime to both; and if two numbers be proposed, whereof the first does not measure the second, it will not measure any product of the second, if the multiplier be prime to the first. Thus, because 7 does not measure 12, it will not measure any product of 12 by a multiplier prime to 7. For instance, it will not measure 12×3, or 36. Otherwise, the quotient of 12 divided by 7, or $1\frac{5}{7}$ multiplied by 3, would be a whole number, and 5×3 would be measured by 7, which it cannot be, since 5 and 3 are both prime to 7.

Now, if we inspect the foregoing operation, we shall perceive that the product of 136, the remainder where the decimal begins to circulate, multiplied by 999, is measured by the denominator 216. But 999 is not measured by the denominator, otherwise the decimal would have been a pure circulate, therefore 126 and 136 are not prime to each other, but have a common measure, and that measure must apply to 864, a multiple of 126, and to 1000, the sum of 136 and 864; see p. 642, col. 2. par. *ult.* &c. But it was proven, p. 649, col. 1. par. 1. that no numbers, except the powers of 5 and 2, measure a number consisting of 1 with cyphers annexed; consequently the denominator must be measured by a power of 2 or 5. The reader will perceive, that the exponent of the power must be the same as the number of cyphers annexed to 1, or as the number of figures in the finite part of the decimal.

We shall now recapitulate the substance of what has been said with respect to the formation of decimals. 2, 5, and their powers, produce finite decimals, by p. 649. col. 1. par. 3. &c. and the number of places is measured by the exponent of the power; 3 and 9 produce pure repeaters (p. 649. col. 2. par. 2.) The products of 2, 5, and their powers, by 3 or 9, produce mixed repeaters by p. 649. col. 2. par. *ult.*; their products by other multipliers, produce mixed circulates by p. 649. col. 2. par. *ult.*; and all numbers of which 2 and 5 are not aliquot parts, except 3 and 9, produce pure circulates. To find the form of a decimal corresponding to any denominator, divide by 2, 5, and 10, as often as can be done without a remainder; the number of divisions shows how many finite places there are in the decimal, by p. 651. col. 2. par. 3. If the dividend be not exhausted by these divisions, divide a competent number of 9's by the last quotient, till the division be completed without a remainder: the number of 9's required show how many places there are in the circle; and the reason may be inferred from p. 650. col. 2. par. 5.

We shall conclude this subject by marking down the decimals produced by vulgar fractions, whose numerator is 1, and denominator 30; and under that the reader may observe their connexion with the denominators.

$\frac{1}{2}=.5$	$\frac{1}{16}=.0625$
$\frac{1}{3}=.333$	$\frac{1}{17}=.0588235294117647$
$\frac{1}{4}=.25$	$\frac{1}{18}=.0558$
$\frac{1}{5}=.2$	$\frac{1}{19}=.0526315789473684210$,
$\frac{1}{6}=.1666$	$\frac{1}{20}=.05$
$\frac{1}{7}=.142857$,	$\frac{1}{21}=.047619$,
$\frac{1}{8}=.125$	$\frac{1}{22}=.045454$,
$\frac{1}{9}=.111$	$\frac{1}{23}=.0434782608695652173913$,
$\frac{1}{10}=.1$	$\frac{1}{24}=.041666$
$\frac{1}{11}=.09090$,	$\frac{1}{25}=.04$
$\frac{1}{12}=.08333$	$\frac{1}{26}=.0384615$,
$\frac{1}{13}=.076923$,	$\frac{1}{27}=.037$,
$\frac{1}{14}=.0714285$	$\frac{1}{28}=.03571428$
$\frac{1}{15}=.066$	$\frac{1}{29}=.0344827586206896551724137931$,
	$\frac{1}{30}=.0333$

Rules *for reducing interminate decimals to vulgar fractions.*

I. "If the decimal be a pure repeater, place the "repeating figure for the numerator, and 9 for the "denominator."

II. "If the decimal be a pure circulate, place the "circulating figures for the numerator, and as many "9's as there are places in the circle for the denominator."

III. "If there be cyphers prefixed to the repeating "or circulating figures, annex a like number to the "9's in the denominator.

IV. "If the decimal be mixed, subtract the finite "part from the whole decimal. The remainder is the "numerator; and the denominator consists of as many "9's as there are places in the circle, together with "as many cyphers as there are finite places before the "circle."

Thus, $235,62,=\frac{23372}{990000}$

From the whole decimal	23562
We subtract the finite part	235
and the remainder	23327 is the numerator.

The reason may be illustrated by dividing the decimal into two parts, whereof one is finite, and the other a pure repeater or circulate, with cyphers prefixed. The sum of the vulgar fractions corresponding to these will be the value of the decimal sought.

.235,62, may be divided into $.235=\frac{235}{1000}$ by Rule I. and $.000,62=\frac{62}{99000}$, by Rules II. III.

In order to add these vulgar fractions, we reduce them to a common denominator; and, for that purpose, we multiply both terms of the former by 99, which gives $\frac{23265}{99000}$; then we add the numerators.

235 or by method explained p. 628. col. 1. par. 3.
99

		Sum of numerators.	
2115	23500	23265 or	23562
2115	235	62	235
23265	23265	23327	23327

The value of circulating decimals is not altered, though one or more places be separated from the circle, and considered as a finite part, providing the circle be completed. For example, .27 may be written .2,72, which is reduced by the last of the foregoing rules to $\frac{272}{990}$, or $\frac{136}{495}$, which is also the value of .27. And if two or more circles be joined, the value of the decimal is still the same. Thus, $2727,=\frac{2727}{9999}$ which is reduced by dividing the terms by 101 to $\frac{27}{99}$.

All

Intermi-nate Deci-mals.

All circulating decimals may be reduced to a similar form, having a like number both of finite and circulating places. For this purpose, we extend the finite part of each as far as the longeſt, and then extend all the circles to ſo many places as may be a multiple of the number of places in each.

Ex. .34.725, extended, .34,725725725725,
1,4562, 14,562456245624,

Here the finite part of both is extended to two places, and the circle to 12 places, which is the leaſt multiple for circles of 3 and 4 places.

Sect. II. Addition *and* Subtraction *of* Interminate Decimals.

30

To add repeating Decimals. "Extend the repeating "figures one place beyond the longeſt finite ones, and "when you add the right-hand column, carry to the "next by 9."

Ex. .37524 or	37524	.23	.296	$\frac{7}{33}$
.8	88888	.38	.42	$\frac{4}{11}$
.643	643	.4697	.7548	$\frac{11}{13}$
.73	73333	.30	.31	$\frac{2}{65}$
	264046			

To ſubtract repeating Decimals. "Extend them as "directed for addition, and borrow at the right-hand "place, if neceſſary, by 9."

.93560	.646	.7358	.7382	.469
.84738	.53427	.62563	.68	.38
.08727	.11172			

The reaſon of theſe rules will be obvious, if we recollect that repeating figures ſignify nine parts. If the right-hand figure of the ſum or remainder be 0, the decimal obtained is finite; otherwiſe it is a repeater.

To add circulating Decimals. "Extend them till they "become ſimilar (p. 652. col. 1. par. *ult.* &c.); and "when you add the right-hand column, include the fi-"gure which would have been carried if the circle had "been extended further."

Ex. 1ſt.]	*Extended.*	*Ex.* 2d.]	*Extended.*
.574,	.574 574,	.874,	.874,874,874,
.2,698,	.269,869,	.1463	.146,333333,
.428	.428	.1 58,	.158,585858,
.37,983,	.379,839,	.32,	.323,232323,
	1.652,284,		1,503,026390,

Note 1. Repeaters mixed with circulates are extended and added as circulates.

Note 2. Sometimes it is neceſſary to inſpect two or more columns for aſcertaining the carriage; becauſe the carriage from a lower column will ſometimes raiſe the ſum of the higher, ſo as to alter the carriage from it to a new circle. This occurs in Ex. 2.

Note 3. The ſum of the circles muſt be conſidered as a ſimilar circle. If it conſiſt entirely of cyphers, the amount is terminate. If all the figures be the ſame, the amount is a repeater. If they can be divided into parts exactly alike, the amount is a circle of fewer places; but, for the moſt part, the circle of the ſum is ſimilar to the extended circles.

.3,868,	.0842,	$\frac{2}{7}$	.368	.003094.	$\frac{5}{11}$,
.4,375,	.08.42	$\frac{3}{5}$	.57,	.765,	$\frac{3}{13}$
.853492,	.0.842	$\frac{8}{11}$	.895	.76,	$\frac{2}{17}$
.62,	.0842	$\frac{16}{37}$	.742	.765	$\frac{3}{24}$

To ſubtract circulating Decimals. "Extend them till they "become ſimilar; and when you ſubtract the "right-hand figure, conſider whether it would have "been borrowed if the circles had been extended fur-"ther, and make allowance accordingly.

.5.72,	.974, or .974974	.8,135,	or .8,145145,
.486,	.86,	.868686,	.429.7 or .429.74,
.085,	.106288,		.36666,
			or .366

Sect. III. Multiplication *of* Interminate Decimals. 31

Case I. "When the multiplier is finite, and the "multiplicand repeats, carry by 9 when you multiply "the repeating figure: The right-hand figure of each "line of the product is a repeater; and they muſt be "extended and added accordingly."

Ex. .13494
.376

94461
80966
40483333

.0495246

If the ſum of the right-hand column be an even number of 9's, the product is finite; otherwiſe, it is a repeater.

Case II. "When the multiplier is finite, and the "multiplicand circulates, add to each product of the "right-hand figure the carriage which would have "been brought to it if the circle had been extended. "Each line of the product is a circle ſimilar to the "multiplicand, and therefore they muſt be extended "and added accordingly."

The product is commonly a circulate ſimilar to the multiplicand; ſometimes it circulates fewer places, repeats, or becomes finite; it never circulates more places.

Ex. .37,46, × .235	1. .674,	× .8
235,	2. .37,	× .86
	3. .625.	× .42
187,32,	4. .4703	× 48
1123,93,	5. .3,75.	× 1 24
7492,92,	6. .2,963,	× .36
.08804,19,		

Case III. "When the multiplier repeats or cir-"culates, find the product as in infinite multipliers, and "place under it the products which would have ariſen "from the repeating or circulating figures, if extend-"ed."

Ex. 1ſt.]	.958+.8.	2d.]	.784+.36
	8		36
	7664		4704
	76664		2352
	76664		28224
	76664		28224
	17664		28224
	.8513		.284,09,

3d.]

Intermi-nate Decimals.

3d.] .714285, × 54,
54

2859142
35714285

38,571428|571428|571428,
3857142|857142|857142,
385714|2857142|857142,
38571|42857142|857142,
3857|142857142|857142,
385|7142857142|857142,
38|57142857142|857142,
3|857142857142|857142,
|38571428571428|571428,
|3857142857142|857142,
|385714285714|285714,
|38571428571|428571,
|3857142857|142857,
|385714285|714285,
|38571428|571428,
|3857142|857142,
|385714|285714,
|38571|428571,
|3857|142857,
|385|714285,
|38|571428,
|3|857142,
|||38,

38.961038,961038,961038,

It is evident, that if a repeating multiplier be extended to any length, the product arising from each figure will be the same as the first, and each will stand one place to the right-hand of the former. In like manner, if a circulating multiplier be extended, the product arising from each circle will be alike, and will stand as many places to the right hand of the former as there are figures in the circle. In the foregoing examples, there are as many of these products repeated as is necessary for finding the total product. If we place down more, or extend them further, it will only give a continuation of the repeaters or circulates.

This is obvious in Ex. 1st and 2d. As the learner may not apprehend it so readily in Ex. 3d, when the multiplicand is a circulate, and consequently each line of the product is also a circulate, we have divided it into columns, whose sums exhibit the successive circles. The sum of the first column is 38 961037, and there is a carriage of 1 from the right-hand column, which completes 38,961038. This one is supplied from the three first lines of the second column, the sum of which is 999999, and being increased by 1, in consequence of the carriage from the third column, amounts to 1,000000, and therefore carries 1 to the first column, and does not affect the sum of the remaining lines, which are the same as those of the first column. The third column contains two sets of these lines, which amount to 999999, besides the line which compose the circle. Each of these sets would be completed into 1,000000 by the carriage from the 4th column, if extended, and each would carry 1 to the second column. One of these would complete the sum of the three first lines, and the other would complete the sum of the circle. In like manner, if the circles be extended ever so far, the increasing carriages will exactly answer for the increasing deficiencies, and the sum will be always a continuation of the circle: but the product could not circulate, unless the sum of the lines marked off in the second column had consisted entirely of 9's; or had been some multiple of a number of 9's; and the circles must be extended till this take place, in order to find the complete product.

Intermi-nate Decimals.

The multiplication of intermediate decimals may be often facilitated, by reducing the multiplier to a vulgar fraction, and proceeding as directed p. 643. col. 1. par. 6.

Thus,

4th.] .3824 × $\frac{7}{9}$ = .
7

9)2 6·68
·9742

5th.] .384 × .23 = $\frac{23}{60}$
23 2

1152 23
768

90)8 832
·09813.

Therefore, in order to multiply by 3, we take one third part of the multiplier; and, to multiply by 6, we take two-thirds of the same. Thus,

6th.] .784 = ·3 × $\frac{1}{3}$

3)·784
·2613

7th.] .8761 × .6 = $\frac{2}{3}$
2

3)1.7522
·58406

As the denominator of the vulgar fractions always consists of 8's, or of 9's with cyphers annexed, we may use the contraction explained p. 631. col. 1. par. *ult.* &c.; and this will lead us exactly to the same operation which was explained p. 653. col. 2. par. ult. &c. on the principles of decimal arithmetic.

8th.] .735 × .3,26 = $\frac{1323}{9900}$
323 3

2205 323
1470
2205

99|0(237405
2374.05
23.74
,23

.239803,

9th.] .278 × 365, = $\frac{3655}{9999}$
365

1390
1668
834

999)101470,
101,

.101,571,

When the multiplier is a mixed repeater or circulate, we may proceed as in Ex. 5th and 8th; or we may divide the multiplier into two parts, of which the first is finite, and the second a pure repeater or circulate, with cyphers prefixed, and multiply separately by these, and add the products.

Thus, .384 × .23 or by .2 = .0768 and by .05 = .02133 = .09813

or thus,

.384
.23

9)1920

2133
768

09813

In the following examples, the multiplicand is a repeater; and therefore the multiplication by the numerator of the vulgar fraction is performed as directed p. 653. col. 2. par. 2.

10th.]

Interminate Decimals.

10th.] $.68\frac{3}{9} \times .8\frac{5}{9}$

5

9)3.416(.37,962,
27

71
63

*86
81

56
54

26
18

*86

11th.] $.63 \times .2,39, = \frac{3}{11}$

.237 2

418 237
180
12660

99)15010(.15,16,
99

511
495

*160
99

610
594

*16

In the following examples the multiplicand is a circulate, and therefore the multiplication by the numerator is performed as directed p. 653. col. 2. par. 4.

12th.] $.3,81, \times 53 = \frac{48}{99}$

48 5

3054 48
15272

9|0)183,27,(.203,63,
18

*032
27

57
54

*32

13th.] $.12, \times 03, = \frac{1}{99}$

3

99)36,36(.03673094582185491276 4,
666

723
306
936
453
576
813
216
183
846
543
486
903
126
273
756
633
396
*036

In Ex. 13th, we have omitted the products of the divisor, and only marked down the remainders. These are found, by adding the left hand figure of the dividual to the remaining figure of the same. Thus, 273 is the first dividual; and 3, the left hand figure, added to 63, the remaining figures, gives 66 for the first remainder; and the second dividual, 036, is completed by annexing the circulating figure 6. The reason of which may be explained as follows. The left hand place of each dividual shows, in this example, how many hundreds it contains; and as it must contain an equal number of ninety-nines, and also an equal number of units, it follows, that these units, added to the lower places, must show how far the dividual exceeds that number of ninety-nines. The figure of the quotient is generally the same as the first place of the dividual, sometimes one more. This happens in the last step of the foregoing example, and is discovered when the remainder found, as here directed, would amount to 99, or upwards; and the excess above 99 only, must in that case be taken to complete the next dividual.

14th.] $.01, \times .01, = \frac{1}{99}$

1

99,.01,(000102030405060708091011121314151617181920
(21222324252627282930313233343536373839 40
(41424344 46474849 51525354555657585960
(61626364656667686970717273747576777879
(81828384858687888990919293949596979899

The number of places in the circle of the product is sometimes very great, though there be few places in the factors: but it never exceeds the product of the denominator of the multiplier, multiplied by the number of places in the circle of the multiplicand. Therefore, if the multiplier be 3 or 6, the product may circulate three times as many places as the multiplicand; if the multiplier be any other repeater, nine times as many; if the multiplier be a circulate of two places, ninety-nine times as many; thus, in the last example, .01, a circulate of two places, multiplied by .10, a circulate of two places, produces a circulate of twice 99, or 198 places. And the reason of this limit may be inferred from the nature of the operation; for the greatest possible number of remainders, including 0, is equal to the divisor 99; and each remainder may admit two dividuals, if both the circulating figures, 3 and 6, occur to be annexed to it. If the multiplier circulate three places, the circle of the product, for a like reason, may extend nine hundred and ninety-nine times as far as that of the multiplicand. But the number of places is often much less.

The multiplication of interminate decimals may be proven, by altering the order of the factors, (p. 628. col. 2. par. 2.) or by reducing them both to vulgar fractions in their lowest terms, multiplying these as directed p. 643. col. 2. par. 3. and reducing the product to a decimal.

Sect. IV. Division of Interminate Decimals.

Case I. "When the dividend only is interminate, "proceed as in common arithmetic; but, when the fi- "gures of the dividend are exhausted, annex the re- "peating figure, or the circulating figures in their or- "der, instead of cyphers, to the remainder."

Ex.

Interminate Decimals.

Ex. 1ſt.] Divide .5376 by 7

·7)·5376(·76,095238,
49
42
42
*066
63
36
35
16
14
26
21
56
56
*066

2d.] Divide .843 by 5.

·5)843(·1686
5
34
30
43
40
*33
30
33

3d.] Divide .6532$ by 8.

8).6532$(.08166*x*.

In theſe accounts the quotient is never finite. It may repeat if the dividend repeats; or, if the dividend circulate, it may circulate an equal number of places, often more, and never fewer. The greateſt poſſible extent of the circle is found by multiplying the diviſor into the number of places in the circle of the dividend. Thus, a circulate of 3 places, divided by 3, quotes a circulate of 3 times 3 or 9 places.

Case II. "When the diviſor is interminate, the mul- "tiplications and ſubtractions muſt be performed ac- "cording to the directions given for repeating and "circulating decimals."

Ex. 1ſt.] Divide .37845 by *g*.

g).37845(.68121
333333
45116
44444
672
558
116
111
g
g
0

2d.] Divide .245892 by 2.18.

.2,18,).24,5892(1.127005
218181,81,
27710,18,
21818,18,
5892,00,
4363,63,
1528,36,
1527,27,
1090,90
1090,90
0

Extraction of Roots.

The foregoing method is the only one which properly depends on the principles of decimal arithmetic; but it is generally ſhorter to proceed by the following rule.

"Reduce the diviſor to a vulgar fraction, multiply "the dividend by the denominator, and divide the "product by the numerator."

Ex. 1ſt.] Divide .37845 by $g=\frac{5}{9}$.

9
5)3.40605(.68121.

2d.] Divide .3784$ by $\phi=\frac{3}{4}$

3
2)1.13536(.567683.

Note 1. Diviſion by 3 triples the dividend, and diviſion by ϕ increaſes the dividend one-half.

Note 2. When the diviſor circulates, the denominator of the vulgar fraction conſiſts of 9's, and the multiplication is ſooner performed by the contraction explained p. 628. col. 1. par. 1. It may be wrought in the ſame way, when the diviſor repeats, and the denominator, of conſequence, is 9.

Note 3. If a repeating dividend be divided by a repeating or circulating diviſor; or, if a circulating dividend be divided by a ſimilar circulating dividend; or, if the number of places in the circle of the diviſor be a multiple of the number in the dividend; then the product of the dividend multiplied by the denominator of the diviſor will be terminate, ſince like figures are ſubtracted from like in the contracted multiplication, and conſequently no remainder left. The form of the quotient depends on the diviſors as explained at large, p. 649. col. 1. par. 1.—p. 651. col. 2. par. 3.

Note 4. In other caſes, the original and multiplied dividend are ſimilar, and the form of the quotient is the ſame as in the caſe of a finite diviſor. See p. 655. col. 2. par. *ult.* &c.

Note 5. If the terms be ſimilar, or extended till they become ſo, the quotient is the ſame as if they were finite, and the operation may be conducted accordingly; for the quotient of vulgar fractions that have the ſame denominator is equal to the quotient of their numerators.

Chap. XI. OF THE EXTRACTION OF ROOTS.

The origin of powers by involution has already been explained under the article Algebra, N° 66. There now remains therefore only to give the moſt expeditious methods of extracting the ſquare and cube roots; the reaſons of which will readily appear from what is ſaid under that article. As for all powers above the cube, unleſs ſuch as are multiples of either the ſquare and cube, the extraction of their roots admits of no deviation from the algebraic canon which muſt be always conſtructed on purpoſe for them.

If the root of any power not exceeding the ſeventh power be a ſingle digit, it may be obtained by inſpection, from the following table of powers.

Extraction of Roots.

1st power or root.	2d power or square.	3d power or cube.	4th power or biquadrate.	5th power or furfolid.	6th power or cube squared.	7th power.
1	1	1	1	1	1	1
2	4	8	16	32	64	128
3	9	27	81	243	729	2187
4	16	64	256	1024	4096	16384
5	25	125	625	3125	15625	78125
6	36	216	1296	7776	46656	279936
7	49	343	2401	16807	117649	823543
8	64	512	4096	32768	262144	2097152
9	81	729	6561	59049	531441	4782969

Sect. I. Extraction of the Square Root.

34

Rule I. "Divide the given number into periods "of two figures, beginning at the right hand in integers, and pointing toward the left. But in decimals, begin at the place of hundreds, and point toward the right. Every period will give one figure "in the root."

II. "Find by the table of powers, or by trial, the "neareſt leſſer root of the left-hand period; place the "figure ſo found in the quot; ſubtract its ſquare from "the ſaid period, and to the remainder bring down "the next period for a dividual or reſolvend."

III. "Double the quot for the firſt part of the "diviſor; inquire how often this firſt part is contained "in the whole reſolvend, excluding the units place; "and place the figure denoting the anſwer both in "the quot and on the right of the firſt part; and you "have the diviſor complete."

IV. "Multiply the diviſor thus completed by the "figure put in the quot, ſubtract the product from "the reſolvend, and to the remainder bring down the "following period for a new reſolvend, and then pro-"ceed as before."

Note 1ſt. If the firſt part of the diviſor, with unity ſuppoſed to be annexed to it, happen to be greater than the reſolvend, in this caſe place 0 in the quot, and alſo on the right of the partial diviſor; to the reſolvend bring down another period; and proceed to divide as before.

Note 2. If the product of the quotient figure into the diviſor happen to be greater than the reſolvend, you muſt go back, and give a leſſer figure to the quot.

Note 3. If, after every period of the given number is brought down, there happen at laſt to be a remainder, you may continue the operation, by annexing periods or pairs of cyphers, till there be no remainder, or till the decimal part of the quot repeat or circulate, or till you think proper to limit it.

Ex. 1ſt. Required the ſquare root of 133225.

. . .

Square number 133225(365 root	365
9	365
1 div. 66) 432 reſolvend.	1825
396 product.	2190
2 div. 725) 3625 reſolvend.	1095
3625 product.	133225 proof.

2d.] Required the ſquare root of 72, to eight decimal places.

. . . .

72.00000000
64

164(800
656

1688)14400
13504

16965)89600
84825

169702)477500
339404

169704)138096
. . . . 135763

2333
1697

636
509

127
118

(9)

After getting half of the decimal places, work by contracted diviſion for the other half; and obtain them with the ſame accuracy as if the work had been at large.

3d.] Required the ſquare root of .2916.

. .

.2916(.54 root.
25

104 416
416

If the ſquare root of a vulgar fraction be required, find the root of the given numerator for a new numerator, and find the root of the given denominator for a new denominator. Thus the ſquare root of $\frac{4}{9}$ is $\frac{2}{3}$, and the root of $\frac{25}{49}$ is $\frac{5}{7}$; and thus the root of $\frac{9}{4}$ $(=6\frac{1}{4})$ is $\frac{3}{2}=2\frac{1}{2}$.

But if the root of either the numerator or denominator cannot be extracted without a remainder, reduce the vulgar fraction to a decimal, and then extract the root, as in Ex. 3d. above.

Sect. II. Extraction of the Cube Root.

35

Rule I. "Divide the given number into periods "of three figures, beginning at the right hand in integers, and pointing toward the left. But in decimals, begin at the place of thouſands, and point toward the right. The number of periods ſhows the "number of figures in the root."

II. "Find by the table of powers, or by trial, the "neareſt leſſer root of the left-hand period; place the "figure ſo found in the quot; ſubtract its cube from "the ſaid period; and to the remainder bring down "the next period for a dividual or reſolvend."

The diviſor conſiſts of three parts, which may be found as follows.

Extraction of Roots.

III. "The first part of the divisor is found thus: "Multiply the square of the quot by 3, and to the pro- "duct annex two cyphers; then inquire how often this "first part of the divisor is contained in the resolvend, "and place the figure denoting the answer in the quot."

IV. "Multiply the former quot by 3, and the pro- "duct by the figure now put in the quot; to this last "product annex a cypher; and you have the second "part of the divisor. Again, Square the figure now "put in the quot for the third part of the divisor; "place these three parts under one another, as in addi- "tion; and their sum will be the divisor complete."

V. "Multiply the divisor, thus completed, by the "figure last put in the quot, subtract the product from "the resolvend, and to the remainder bring down the "following period for a new resolvend, and then pro- "ceed as before."

Note 1. If the first part of the divisor happen to be equal to or greater than the resolvend; in this case, place 0 in the quot, annex two cyphers to the said first part of the divisor, to the resolvend bring down another period, and proceed to divide as before.

Note 2. If the product of the quotient figure into the divisor happen to be greater than the resolvend, you must go back, and give a lesser figure to the quot.

Note 3. If, after every period of the given number is brought down, there happen at last to be a remainder, you may continue the operation by annexing periods of three cyphers till there be no remainder, or till you have as many decimal places in the root as you judge necessary.

Ex. 1st. Required the cube root of 12812904.

Cube number 12812904(234 root.
8
1st part 1200 })4812 resolvend.
2d part 180 }
3d part 9 }
1 divisor 1389 × 3 = 4167 product.
1st part 158700 })645904 resolvend.
2d part 2760 }
3d part 16 }
2 divisor 161476 × 4 = 645904 product.

PROOF.

234	Square 54756
234	234
936	219024
702	164268
468	109512
Square 54756	Cube 12812904

2d.] Required the cube root of $28\frac{3}{4}$.

28.750000(3.06 root.
27
270600 })1750000 resolv.
5400 }
36 }
Div. 275436 × 6 = 1652616 prod.
97384 rem.

PROOF.

3.06	Sq. 9.3636
3.06	3.06
1836	561816
918	280908
Sq. 9.3636	28.652616
	97384 rem.
	28.750000 cube.

If the cube root of a vulgar fraction be required, find the cube root of the given numerator for a new numerator, and the cube root of the given denominator for a new denominator. Thus, the cube root of $\frac{8}{343}$ is $\frac{2}{7}$, and the cube root of $\frac{27}{64}$ is $\frac{3}{4}$; and thus the cube root of $12\frac{5}{8}$ $(=15\frac{5}{8})$ is $\frac{5}{2}=2\frac{1}{2}$.

But if the root of either the numerator or denominator cannot be extracted without a remainder, reduce the vulgar fraction to a decimal, and then extract the root.

ARI

Arius.

ARIUS, a divine of the fourth century, the head and founder of the ARIANS, a sect which denied the eternal divinity and substantiality of the Word. He was born in Libya, near Egypt. Eusebius, bishop of Nicomedia, a great favourite of Constantia, sister of the emperor Constantine, and wife of Licinius, became a zealous promoter of Arianism. He took Arius under his protection, and introduced him to Constantia; so that the sect increased, and several bishops embraced it openly. There arose, however, such disputes in the cities, that the emperor, in order to remedy these disorders, was obliged to assemble the council of Nice, where, in the year 325, the doctrine of Arius was condemned. Arius was banished by the emperor, all his books were ordered to be burnt, and capital punishment was denounced against whoever dared to keep them. After five years banishment, he was recalled to

ARI

Arius.

Constantinople, where he presented the emperor with a confession of his faith, drawn up so artfully, that it fully satisfied him. Notwithstanding which, Athanasius, now advanced to the see of Alexandria, refused to admit him and his followers to communion. This so enraged them, that, by their interest at court, they procured that prelate to be deposed and banished. But the church of Alexandria still refusing to admit Arius into their communion, the emperor sent for him to Constantinople; where, upon delivering in a fresh confession of his faith in terms less offensive, the emperor commanded Alexander, the bishop of that church, to receive him the next day into his communion: but that very evening Arius died. The manner of his death was very extraordinary: as his friends were conducting him in triumph to the great church of Constantinople, Arius, pressed by a natural necessity, stepped aside to ease himself;

Ark. himſelf; but expired on the ſpot, his bowels guſhing out.

But the hereſy did not die with the hereſiarch: his party continued ſtill in great credit at court. Athanaſius, indeed, was ſoon recalled from baniſhment, and as ſoon removed again; the Arians being countenanced by the government, and making and depoſing biſhops as it beſt ſerved their purpoſes. In ſhort, this ſect continued with great luſtre above 300 years: it was the reigning religion of Spain for above two centuries; it was on the throne both in the eaſt and weſt; it prevailed in Italy, France, Pannonia, and Africa; and was not extirpated till about the end of the 8th century.

This hereſy was again ſet on foot in the weſt by Servetus, who, in 1531, wrote a little treatiſe againſt the myſtery of the Trinity. After his death Arianiſm got footing in Geneva; from whence it removed into Poland; but at length degenerated, in a great meaſure, into Socinianiſm. Eraſmus ſeems to have aimed at reviving Arianiſm, in his Commentaries on the New Teſtament; and the learned Grotius ſeems to lean a little that way.

With regard to the ſtate of Arianiſm in England, it may be ſufficient to obſerve, that from the numerous publications of that caſt which are daily making their appearance, it ſeems to be rather a growing, than exploded, doctrine there.

Plate LVII. fig. 1. ARK, or *Noah's* Ark, a floating veſſel built by Noah, for the preſervation of his family, and the ſeveral ſpecies of animals, during the deluge.

The ark has afforded ſeveral points of curious inquiry among the critics and naturaliſts, relating to its form, capacity, materials, &c.

The wood whereof the ark was built is called in the Hebrew *Gopher wood*, and in the Septuagint *ſquare timbers*. Some tranſlate the original *cedar*, others *pine*, others *box*, &c. Pelletier prefers cedar on account of its incorruptibility, and the great plenty of it in Aſia; whence Herodotus and Theophraſtus relate, that the kings of Egypt and Syria built whole fleets thereof, inſtead of deal.

The learned Mr Fuller, in his Miſcellanies, has obſerved, that the wood whereof the ark was built was nothing but that which the Greeks call κυπαρισσος, or the *cypreſs tree*; for, taking away the termination, *kupar* and *gopher* differ very little in ſound. This obſervation the great Bochart has confirmed, and ſhown very plainly that no country abounds ſo much with this wood as that part of Aſſyria which lies about Babylon.

In what place Noah built and finiſhed his ark is no leſs made a matter of diſputation. But the moſt probable opinion is, that it was built in Chaldea, in the territories of Babylon, where there was ſo great a quantity of cypreſs in the groves and gardens in Alexander's time, that that prince built a whole fleet out of it for want of timber. And this conjecture is confirmed by the Chaldean tradition, which makes Xiſuthrus (another name for Noah) ſet ſail from that country.

The dimenſions of the ark, as given by Moſes, are 300 cubits in length, 50 in breadth, and 30 in height; which ſome have thought too ſcanty, conſidering the number of things it was to contain; and hence an argument has been drawn againſt the authority of the relation. To ſolve this difficulty, many of the ancient fathers and the modern critics have been put to very Ark. miſerable ſhifts: But Buteo and Kircher have ſhown geometrically, that taking the common cubit of a foot and a half, the ark was abundantly ſufficient for all the animals ſuppoſed to be lodged in it. Snellius computes the ark to have been above half an acre in area. Father Lamy ſhows, that it was 112 feet longer than the church of St Mary at Paris, and 64 feet narrower: and if ſo, it muſt have been longer than St Paul's church in London, from weſt to eaſt, and broader than that church is high in the inſide, and 54 feet of our meaſure in height; and Dr Arbuthnot computes it to have been 81062 tons.

The things contained in it were, beſides eight perſons of Noah's family, one pair of every ſpecies of unclean animals, and ſeven pair of every ſpecies of clean animals, with proviſions for them all during the whole year. The former appears, at firſt view, almoſt infinite; but if we come to a calculation, the number of ſpecies of animals will be found much leſs than is generally imagined; out of which, in this caſe, are excepted ſuch animals as can live in the water; and Biſhop Wilkins ſhows that only 72 of the quadruped kind needed a place in the ark.

By the deſcription Moſes gives of the ark, it appears to have been divided into three ſtories, each ten cubits or 15 feet high; and it is agreed on, as moſt probable, that the loweſt ſtory was for the beaſts, the middle for the food, and the upper for the birds, with Noah and his family; each ſtory being ſubdivided into different apartments, ſtalls, &c. though Joſephus, Philo, and other commentators, add a kind of fourth ſtory under all the reſt; being, as it were, the hold of the veſſel, to contain the ballaſt and receive the filth and fæces of ſo many animals: but F. Calmet thinks, that what is here reckoned a ſtory, was no more than what is called the *keel* of ſhips, and ſerved only for a conſervatory of freſh water. Drexelius makes 300 apartments; F. Fournier, 333; the anonymous author of the queſtions on Geneſis, 400; Buteo, Temporarius, Arias Montanus, Hoſtus, Wilkins, Lamy, and others, ſuppoſe as many partitions as there were different ſorts of animals. Pelletier makes only 72, viz. 36 for the birds, and as many for the beaſts. His reaſon is, that if we ſuppoſe a greater number, as 333 or 400, each of the eight perſons in the ark muſt have had 37, 41, or 60 ſtalls to attend and cleanſe daily, which he thinks impoſſible to have been done. But it is obſerved, that there is not much in this: to diminiſh the number of ſtalls without the diminution of animals is in vain; it being perhaps more difficult to take care of 300 animals in 72 ſtalls than in 300. As to the number of animals contained in the ark, Buteo computes that it could not be equal to 500 horſes; he even reduces the whole to the dimenſions of 56 pair of oxen. F. Lamy enlarges it to 64 pair of oxen, or 128 oxen; ſo that, ſuppoſing one ox equal to two horſes, if the ark had room for 256 horſes, there muſt have been room for all the animals. But the ſame author demonſtrates, that one floor of it would ſuffice for 500 horſes, allowing nine ſquare feet to a horſe.

As to the food in the ſecond ſtory, it is obſerved by Buteo from Columella, that 30 or 40 pounds of hay ordinarily ſuffices for an ox a-day; and that a ſolid cubit of hay, as uſually preſſed down in our hay ricks,

Ark. weighs about 40 pounds; ſo that a ſquare cubit of hay is more than enough for one ox in one day. Now, it appears, that the ſecond ſtory contained 150,000 ſolid cubits; which divided between 206 oxen, will afford each more hay, by two-thirds, than he can eat in a year. Biſhop Wilkins computes all the carnivorous animals equivalent, as to the bulk of their bodies, and their foods, to 17 wolves, and all the reſt to 280 beeves. For the former he allows 1825 ſheep; and for the latter, 109,500 cubits of hay: all which will be eaſily contained in the two firſt ſtories, and a deal of room to ſpare. As to the third ſtory, nobody doubts of its being ſufficient for the fowls? with Noah, his ſons, and daughters. Upon the whole, the learned biſhop remarks, that of the two, it appears much more difficult to aſſign a number and bulk of neceſſary things to anſwer the capacity of the ark, than to find ſufficient room for the ſeveral ſpecies of animals already known to have been there. This he attributes to the imperfection of our liſt of animals, eſpecially thoſe of the unknown parts of the earth; adding, that the moſt expert mathematician at this day could not aſſign the proportion of a veſſel better accommodated to the purpoſe than is here done: and hence he finally concludes, that the capacity of the ark, which had been made an objection againſt Scripture, ought to be eſteemed a confirmation of its divine authority; ſince, in thoſe ruder ages, men, being leſs verſed in arts and philoſophy, were more obnoxious to vulgar prejudices than now; ſo that, had it been a human invention, it would have been contrived, according to thoſe wild apprehenſions which ariſe from a confuſed and general view of things, as much too big as it had been repreſented too little.

But it muſt be obſerved, that, beſides the places requiſite for the beaſts and birds, and their proviſions, there was room required for Noah to lock up houſehold utenſils, the inſtruments of huſbandry, grains, and ſeeds to ſow the earth with after the deluge; for which purpoſe it is thought that he might ſpare room in the third ſtory for 36 cabbins, beſides a kitchen, a hall, four chambers, and a ſpace about 48 cubits in length to walk in.

Plate LVII. fig. 2. *Ark of the Covenant*, a ſmall cheſt or coffer, three feet nine inches in length, two feet three inches in breadth, and two feet three inches in height, in which were contained the golden pot that held manna, and Aaron's rod, and the tables of the covenant. This coffer was made of ſhittim wood, and covered with a lid, which was made of ſolid gold. The ark was repoſited in the holieſt place of the tabernacle. It was taken by the Philiſtines, and detained 20, ſome ſay 40 years, at Kirjath-jearim; but the people being afflicted with emerods on account of it, returned it with divers preſents. It was afterwards placed in the temple.

The lid or covering of the ark was called the *propitiatory* or *mercy-ſeat*; over which were two figures placed called *Cherubims*, with expanded wings of a peculiar form. Here the Schechinah reſted both in the tabernacle and temple in a viſible cloud: hence were iſſued the Divine oracles by an audible voice; and the high prieſt appeared before this mercy-ſeat once every year on the great day of expiation; and the Jews, wherever they worſhipped, turned their faces towards the place where the ark ſtood.

In the ſecond temple there was alſo an ark, made of the ſame ſhape and dimenſions with the firſt, and put in the ſame place, but without any of its contents and peculiar honours. It was uſed as a repreſentative of the former on the day of expiation, and a repoſitory of the original copy of the holy Scriptures, collected by Ezra and the men of the great ſynagogue, after the captivity. And in imitation of this, the Jews to this day have a kind of ark in their ſynagogues, wherein their ſacred books are repoſited. This they call *aron*. Leo of Modena gives a deſcription thereof in his Account of the Cuſtoms and Ceremonies of thoſe of his Nation. "The Jews (ſays he), in the eaſtern ſide of their ſynagogues, have an ark, or armory, called *aron*, in memory of the ark of the covenant. In this are preſerved the five books of Moſes, written on vellum, with ink made on purpoſe," &c. Some have ſuppoſed that the figure of this ark is ſtill remaining on the triumphal arch of Titus at Rome; though Villalpandus and others, with greater reaſon, are of opinion, that it is the table of ſhew bread. *Prideaux's Con.* vol. i. p. 209. Tertullian calls this ark *Armarium Judaicum*; whence the phraſe, *to be in the armory of the ſynagogue*, q. d. in the number of canonical writings.

Ark || Arkwright.

A cheſt or coffer, very nearly reſembling the Jewiſh ark, and called the *houſe of the God*, was found in Huaheine, one of the iſlands in the ſouthern ſea. Mr Banks could obtain no other information concerning it than what the name imports. *Hawkeſworth's Account*, &c. vol. ii. p. 252.

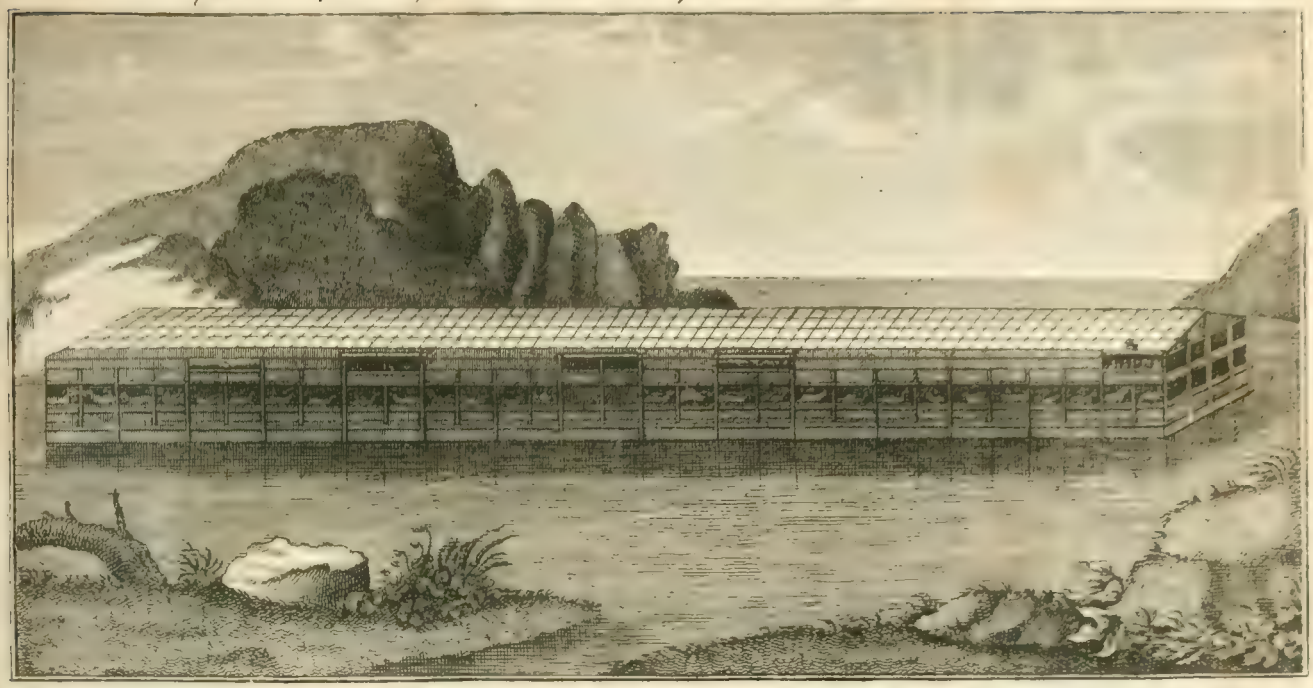
ARKLOW, a ſea-port town of Ireland, in the county of Wicklow, and province of Leinſter. W. Long. 6. 15. N. Lat. 52. 55.

ARKWRIGHT, Sir Richard, celebrated for his invention of machinery in ſpinning and carding cotton, was originally a country barber in poor circumſtances, but acquired by his inventions a very great fortune. About the year 1767, when he had quitted the profeſſion of a barber, and went up and down the country buying hair, he came to Warrington. At that time it is ſaid, he had ſome mechanical project in view, of the nature of a perpetual motion. One John Kay, a clockmaker of that place becoming acquainted with him, endeavoured to diſſuade him from this ſcheme, but ſaid that much money might be made by ſpinning cotton, which he promiſed to deſcribe to him. Arkwright urged as an objection, that that ſcheme had been the ruin of many; but he came to Kay's bedſide next morning, and aſked him if he could make a ſmall engine at a moderate expence, as this Kay had been employed to make a cotton-ſpinning engine for a Mr Hayes, who likewiſe employed himſelf in making cylindrical carding engines, and who was brought as a witneſs on the trial in which Arkwright's patent was ſet aſide in 1785. Mr Hayes proved, that he had invented an engine of a ſimilar conſtruction to Arkwright's, but had not brought it to perfection. Arkwright and Kay made application to Peter Atherton, Eſq. now of Liverpool, to make ſuch an engine; but he refuſed to undertake it, from the external poverty of the former, although on the evening of the ſame day he undertook to give Kay the uſe of a ſmith, and watch-tool maker, to make the heavier parts of the engine; and Kay agreed to inſtruct the workmen, and to make the clockmakers ſhare of it. In this manner Arkwright's

NOAH'S ARK

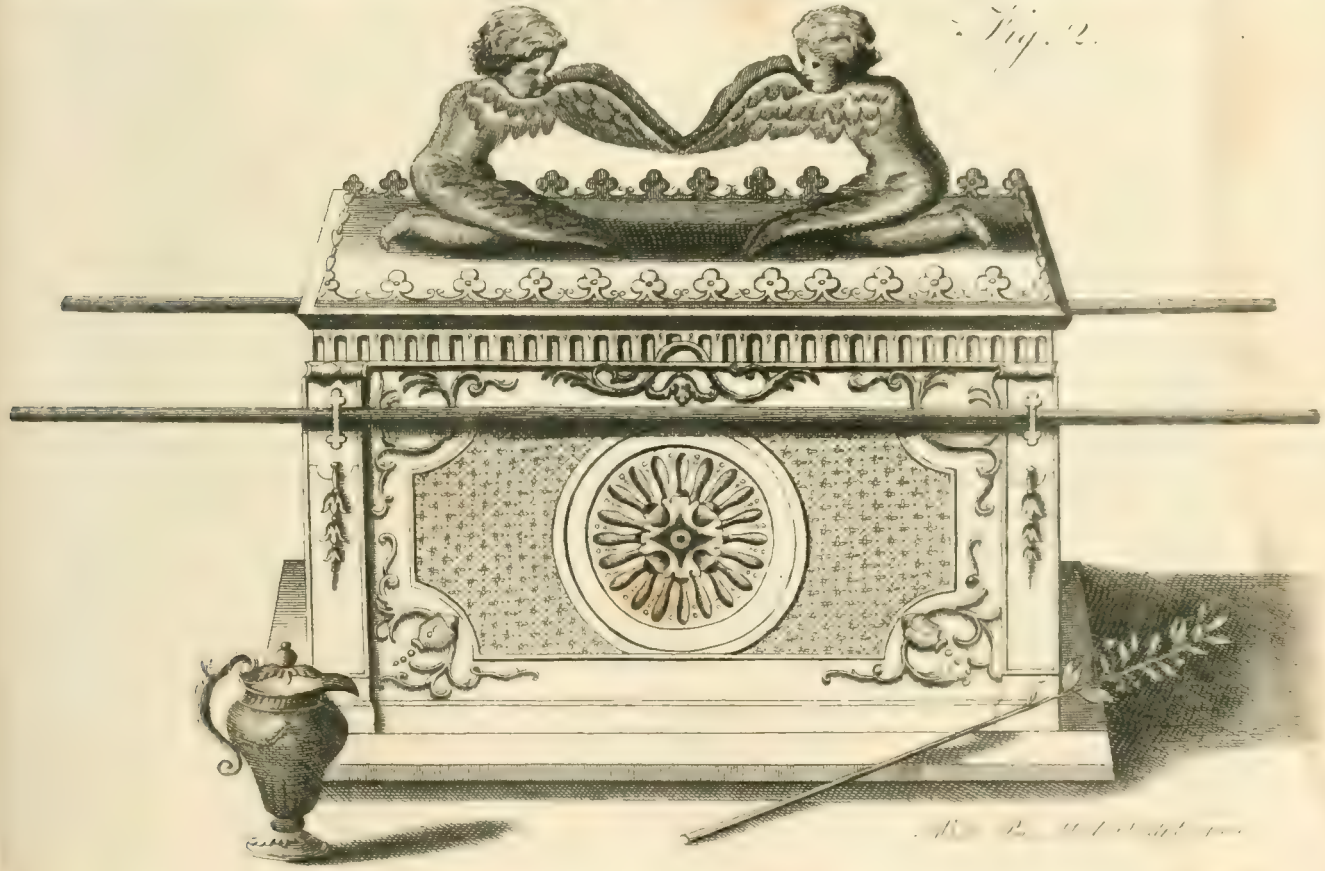
Plate LVII.

Fig. 1. *floating on the waters of the deluge*



ARK of the COVENANT.

Fig. 2.



Arkwright. wright's firſt engine was made, for which he afterwards took out a patent. Mr Arkwright went into partnerſhip ſoon after with a Mr Smally of Preſton in Lancaſhire, but being at a loſs for money, they went to Nottingham, and there, by the aſſiſtance of ſome rich individuals, erected a conſiderable cotton mill, which was turned by horſes.

The report generally circulated through the manufacturing towns is, that he borrowed theſe inventions, and that he enriched himſelf at other men's expence and ingenuity. From all accounts, however, it appears, that the cotton ſpinning was no new attempt at the time Mr Arkwright engaged in it, but an object which had been the ſubject of much attention; but as it had not ſucceeded, it would accordingly happen, that more difficulties were to be overcome, and ſubjects of ſubordinate inventions to be digeſted, and brought to maturity and effect. Although the carding and ſpinning of cotton before Mr Arkwright engaged in it was hardly any thing, yet it became a great national manufacture through his means. He ſtates in his caſe, as drawn by himſelf, that one Paul and others of London, about 40 or 50 years previous to his time, having invented an engine for ſpinning cotton, obtained a patent for it, after which they repaired to Nottingham; and there, after having been aſſiſted by ſeveral perſons, and much money had been expended on the undertaking, many families had been ruined by the failure of their ſcheme;—that various engines had been conſtructed by different perſons, for ſpinning cotton, flax, wool, &c. into ſeveral threads at once, about 20 or 30 years back, but that no real advantage had been derived from them; and that an engine was conſtructed in 1767, by one Hargrave of Blackwell in Lancaſhire, which would at once ſpin 20 or 30 threads of cotton into yarn for the fuſtian manufacture, but that after his engine had been deſtroyed by popular tumults in Lancaſhire, he removed to Nottingham, where for a while he practiſed under a patent; but an aſſociation being formed againſt him, his patent was rendered null, and at length he died in obſcurity and diſtreſs; that he, Arkwright, had invented certain engines for ſpinning and carding, which had taken about five years in bringing them to perfection; and after 12,000l. had been expended upon them, they had neither produced advantage or profit either to him or his partners. As it muſt be allowed, that he did not think to make his ſcheme to bear all at once, he muſt certainly be conſidered as the perſon, who after many others had been unſucceſsful, engaged in a national undertaking, did diſplay ſo much ſkill, perſeverance, and activity, as to make it not only productive of value to himſelf, but likewiſe to the nation at large.

It appears, from theſe various accounts, that the object in which Sir Richard Arkwright was engaged, is of the greateſt national value; that from his various exertions, he is deſerving both of the reſpect and admiration of the world; and, that although his family is enriched, the benefits which the nation have received are ineſtimably greater.

On the 22d of December, 1786, upon preſenting an addreſs from the high ſheriff and hundred of Wirkſworth, he was knighted by his preſent majeſty, and died Auguſt 3. 1793, at his works at Crumford, in Derbyſhire. (*Gen. Biog.*)

Arles || Arm.

ARLES, a city of France, in the department of the Mouths of the Rhone, formerly Provence, ſeated on the eaſt ſide of the Rhone, on a hill, whoſe declivity is towards the north. It is an archbiſhop's ſee; and is celebrated for its antiquities both within and without the city. Thoſe of which any remains are now to be ſeen are the amphitheatre, the obeliſk, the elyſian fields, the ſepulchres, columns with their capitals, buſts, pedeſtals, aqueducts, with ſome remains of the capitol, and the temples of their gods. The other ancient monuments are entirely deſtroyed. Under the amphitheatre, in 1651, they found the ſtatue of Venus, which was worſhipped by this city; and has been ſince carried to the caſtle of Verſailles. It is a maſterpiece which will always be admired by connoiſſeurs.

The amphitheatre is one of the moſt remarkable pieces of antiquity. It was built by the Romans, but the time is unknown, though ſome ſay by Julius Cæſar. It is of an oval form, and about 400 yards in circumference, and the front is 34 yards in height. The middle, called the *arena*, is 142 yards wide and 104 broad. The porticoes or piazzas are three ſtories, built with ſtones of a prodigious ſize. Each of them conſiſts of 60 arches, which ſtill remain; and the walls are of ſurpriſing thickneſs, but gone to decay.

The obeliſk is the only one of this kind to be ſeen in France. It ſeems to be one of the forty brought from Egypt to Rome, becauſe it is of the ſame oriental granite with them. They are generally full of hieroglyphic characters; but this is quite ſmooth. In 1675, it was found in a private garden near the walls of the city, not far from the Rhone. It conſiſts of one piece; and is 52 feet high, and 7 in diameter at the baſe. It is now ſupported with four lions made of bronze; and on the top a blue ball is placed, with the arms of France, and over that a ſun.

Tht Pagans burying place called the *Elyſian Fields*, is without the city, upon an agreeable hill, divided into two parts. The firſt, called *Moulaires*, has very few tombs, they having been broken to build the walls of gardens, which are made in that place. The ſecond, called *Eliſcamp*, contains a great number. Thoſe of the Pagans have the letters D. M. which ſignify *Diis Manibus*. Thoſe of the Chriſtians have a croſs. Pieces of coin of gold, ſilver, and bronze, are found here; as alſo urns, lamps, and cups, without number.

Here is a royal academy of ſciences, conſiſting of thirty members, who muſt be natives, gentlemen, and inhabitants of the city. It enjoys the ſame privileges as that at Paris. Arles is ſurrounded with marſhy land, which renders the air full of vapours, and makes it not very wholeſome. E. Long. 4. 48. N. Lat. 43. 40.

ARLEUX, an ancient town of the Netherlands, in Cambreſis, with a caſtle. It was taken by the French in 1645, and retaken by the Allies in 1711; but the French got poſſeſſion again the ſame month. E. Long. 3. 16. N. Lat. 59. 17.

ARLON, an ancient town of the Netherlands, formerly a ſtrong place, but now diſmantled. It belongs to the houſe of Auſtria. E. Long. 15. 50. Lat. 49. 4.

ARM, a part of the human body, terminating at one end in the ſhoulder, and at the other in the hand.

Arm
ll
Armada.

Arm, among ſportſmen, is applied to a horſe, when by preſſing down his head, he endeavours to defend himſelf againſt the bit, to prevent his being checked by it. The remedy is, to have a wooden ball covered with velvet, or other matter, put on his chaul, which will ſo preſs him between the jaw bones as to prevent his bringing his head ſo near his breaſt.

Arm, in *Geography*, is uſed for the branch of a ſea or river. Italy and Sicily are only parted by an arm of the ſea. St George's arm in the Mediterranean is the Thracian Boſphorus.

Arm is alſo uſed figuratively for power. The ſecular arm is the lay or temporal authority of a ſecular judge; to which recourſe is had for the execution of the ſentences paſſed by eccleſiaſtical judges.

The church ſheds no blood: even the judges of the inquiſition, after they have found the perſon guilty, ſurrender him to the ſecular arm. The council of Antioch, held in 341, decrees, that recourſe be had to the ſecular arm to repreſs thoſe who refuſe obedience to the church: for ſecular arm, they here uſe exterior power.

Arm, in reſpect of the magnet. A loadſtone is ſaid to be armed, when it is capped, caſed, or ſet in iron or ſteel, in order to make it take up the greater weight, and alſo to diſtinguiſh readily its poles. See Magnetism.

ARMACALES, a river of Babylon (Abydenus); called *Foſſa Regia*, the *Royal Trench* or *Cut* (Polybius); the *Royal River* (Ptolemy); *Almarchur* (Pliny); *Naarmalcha*, (Ammian); a factitious channel or cut, made by Nabuchodonoſor, and a horn or branch of the Euphrates, (Abydenus). The Euphrates naturally divides into two channels, one paſſing through Babylon, the other through Seleucia, and then falls into the Tigris; the factitious channel between theſe two is the Royal River; which mixes with the Tigris, a great deal lower down than Seleucia, at Apamea, (Ptolemy).

ARMADA, a Spaniſh term, ſignifying a fleet of men of war. The armada which attempted to invade England in the time of Queen Elizabeth, is famous in hiſtory.

This armada, to which the Spaniards, in confidence of ſucceſs, gave the name of *Invincible*, conſiſted of 150 ſhips, moſt of which were greatly ſuperior in ſtrength and ſize to any that had been ſeen before. It had on board near 20,000 ſoldiers, and 8000 ſailors, beſides 2000 volunteers of the moſt diſtinguiſhed families in Spain. It carried 2650 great guns, was victualled for half a year, and contained ſuch a quantity of military ſtores, as only the Spaniſh monarch, enriched by the treaſures of the Indies and America, could ſupply. The troops on board were to be joined by 34,000 more which the duke of Parma had aſſembled in the neighbourhood of Nieuport and Dunkirk. For tranſporting theſe, he had, with incredible labour, provided a great number of flat-bottomed veſſels, and had brought ſailors to navigate them from the towns in the Baltic. Moſt of theſe veſſels had been built at Antwerp; and as he durſt not venture to bring them from thence by ſea to Nieuport, leſt they ſhould have been intercepted by the Dutch, he was obliged to ſend them along the Scheld to Ghent, from Ghent to Bruges by the canal which joins theſe towns, and from Bruges to Nieuport by a new canal which he dug on the preſent occaſion. This laborious undertaking, in which ſeveral thouſand workmen had been employed, was already finiſhed, and the duke now waited for the arrival of the Spaniſh fleet; hoping, that as ſoon as it ſhould approach, the Dutch and Engliſh ſhips which cruiſed upon the coaſt would retire into their harbours. Armada.

When the news reached England that this mighty fleet was preparing to ſail, terror and conſternation univerſally ſeized the inhabitants. A fleet of not above 30 ſhips of war, and thoſe very ſmall in compariſon, was all that was to oppoſe it by ſea. All the commercial towns of England, however, were required to furniſh ſhips for reinforcing this ſmall navy. The citizens of London, inſtead of fifteen veſſels, which they were commanded to equip, voluntarily fitted out double the number; and the gentry and nobility equipped 43 ſhips at their own charge. Lord Howard of Effingham was admiral: and under him ſerved Drake, Hawkins, and Frobiſher, all of them renowned as ſeamen of courage and capacity. The principal fleet was ſtationed at Plymouth. A ſmaller ſquadron, conſiſting of 40 veſſels, Engliſh and Flemiſh, was commanded by Lord Seymour ſecond ſon of Protector Somerſet, and lay off Dunkirk in order to intercept the duke of Parma.

The land forces of England were more numerous than thoſe of the enemy, but inferior in diſcipline and experience. An army of 20,000 men was diſpoſed in different bodies along the ſouth coaſt, with orders to retire backwards and waſte the country, if they could not prevent the Spaniards from landing; 22,000 foot and 1000 horſe, under the command of the earl of Leiceſter, were ſtationed at Tilbury, in order to defend the capital; and the principal army conſiſting of 34,000 foot and 2000 horſe, commanded by Lord Hunſdon, was reſerved for guarding the queen's perſon, and appointed to march whitherſoever the enemy ſhould appear. Theſe armies, though all the Spaniſh forces had been able to land, would poſſibly have been ſufficient to protect the liberties of their country. But as the fate of England, in that event, muſt depend on the iſſue of a ſingle battle, all men of ſerious reflection entertained the moſt awful apprehenſions of the ſhock of at leaſt 50,000 veterans, commanded by experienced officers, under ſo conſummate a general as the duke of Parma. The queen alone was undaunted. She iſſued all her orders with tranquillity, animated her people to a ſteady reſiſtance, and employed every reſource which either her domeſtic ſituation or her foreign alliances could afford her. She even appeared on horſeback in the camp at Tilbury; and riding through the lines, diſcovered a cheerful and animated countenance, exhorted the ſoldiers to remember their duty to their country and their religion, and profeſſed her intention, though a woman, to lead them herſelf into the field againſt the enemy, and rather periſh in battle than ſurvive the ruin and ſlavery of her people. "I know (ſaid ſhe, intrepidly) I have but the weak and feeble arm of a woman; but I have the heart of a king, and of a king of England too!" The heroic ſpirit of Elizabeth communicated itſelf to the army, and every man reſolved to die rather than deſert his ſtation.

The Spaniſh armada was ready in the beginning of May; but its ſailing was retarded by the death of the

marquis

Armada. marquis of Santa Croce the admiral, and that alſo of the vice admiral the duke of Paliano. The command of the expedition was therefore given to the duke of Medina Sidonia, a man entirely unexperienced in ſea affairs. This promotion, in ſome meaſure, ſerved to fruſtrate the deſign, which was alſo rendered leſs ſucceſsful by ſome other accidents. Upon leaving the port of Liſbon, the armada next day met with a violent tempeſt, which ſunk ſome of the ſmalleſt of their ſhipping, and obliged the fleet to put back into the harbour. After ſome time ſpent in refitting, they put again to ſea. Being deſcried by Fleming, a Scotch pirate, who was roving in theſe ſeas, he immediately ſailed towards the Engliſh fleet, and informed the admiral of their approach. Effingham had juſt time to get out of port when he ſaw the Spaniſh armada coming full ſail towards him, diſpoſed in the form of a creſcent, and ſtretching the diſtance of ſeven miles from the extremity of one diviſion to that of the other. The Engliſh admiral conſidering that the Spaniards would probably be much ſuperior to him in cloſe fight, by reaſon of the ſize of their ſhips and the number of their troops, wiſely reſolved to content himſelf with haraſſing them in their voyage, and with watching attentively all the advantages which might be derived from ſtorms, croſs winds, and ſuch like fortuitous accidents. It was not long before he diſcerned a favourable opportunity of attacking the vice-admiral Recaldo. This he did in perſon; and on that occaſion diſplayed ſo much dexterity in working his ſhip, and in loading and firing his guns, as greatly alarmed the Spaniards for the fate of the vice-admiral. From that time they kept much cloſer to one another; notwithſtanding which, the Engliſh on the ſame day attacked one of the largeſt galeaſſes. Other Spaniſh ſhips came up in time to her relief; but in their hurry one of the principal galleons, which had a great part of the treaſure on board, ran foul of another ſhip, and had one of her maſts broken. In conſequence of this misfortune ſhe fell behind, and was taken by Sir Francis Drake; who on the ſame day took another capital ſhip, which had been accidentally ſet on fire.

Several other rencounters happened, and in all of them the Engliſh proved victorious, through the great advantage which they derived from the lightneſs of their ſhips, and the dexterity of the ſailors. The Spaniards in that age did not ſufficiently underſtand nautical mechanics, to be able to avail themſelves of the unuſual magnitude of their ſhips. The Engliſh ſailed round them, approached or retired, with a velocity that filled them with amazement, and did infinitely greater execution with their cannon; for while every ſhot of theirs proved effectual, their ſhips ſuffered very little damage from the enemy, whoſe guns were planted too high, and generally ſpent their force in air.

The Spaniards, however, ſtill continued to advance till they came oppoſite to Calais; there the duke de Medina having ordered them to caſt anchor, he ſent information to the duke of Parma of his arrival, and entreated him to haſten the embarkation of his forces. Farneſe accordingly began to put his troops on board. But at the ſame time he informed Medina, that agreeably to the king's inſtructions, the veſſels which he had prepared were proper only for tranſporting the troops, but were utterly unfit for fighting; and for Armada. this reaſon, till the armada were brought ſtill nearer, and the coaſt clearer of the Dutch ſhips which had blocked up the harbours of Newport and Dunkirk, he could not ſtir from his preſent ſtation, without expoſing his army to certain ruin, the conſequence of which would probably be the entire loſs of the Netherlands.

In compliance with this requeſt, the armada was ordered to advance; and it had arrived within ſight of Dunkirk, between the Engliſh fleet on the one hand, and the Dutch on the other, when a ſudden calm put a ſtop to all its motions. In this ſituation the three fleets remained for one whole day. About the middle of the night a breeze ſprung up, and Lord Howard had recourſe to an expedient which had been happily deviſed on the day before. Having filled eight ſhips with pitch, ſulphur, and other combuſtible materials, he ſet fire to them, and ſent them before the wind againſt the different diviſions of the Spaniſh fleet.

When the Spaniards beheld theſe ſhips in flames approaching towards them, it brought to their remembrance the havock which had been made by the fire ſhips employed againſt the duke of Parma's bridge at the ſiege of Antwerp. The darkneſs of the night increaſed the terror with which their imaginations were overwhelmed, and the panic flew from one end of the fleet to the other. Each crew, anxious only for their own preſervation, thought of nothing but how to eſcape from the preſent danger. Some of them took time to weigh their anchors, but others cut their cables, and ſuffered their ſhips to drive with blind precipitation, without conſidering whether they did not thereby expoſe themſelves to a greater danger than that which they were ſo ſolicitous to avoid. In this confuſion the ſhips ran foul of one another: the ſhock was dreadful, and ſeveral of them received ſo much damage as to be rendered unfit for future uſe.

When day light returned, Lord Howard had the ſatisfaction to perceive that his ſtratagem had fully produced the deſired effect. The enemy were ſtill in extreme diſorder, and their ſhips widely ſeparated and diſperſed. His fleet had lately received a great augmentation by the ſhips fitted out by the nobility and gentry, and by thoſe under Lord Seymour, who had left Juſtin de Naſſau as alone ſufficient to guard the coaſt of Flanders. Being bravely ſeconded by Sir Francis Drake and all the other officers, he made haſte to improve the advantage which was now preſented to him, and attacked the enemy in different quarters at the ſame time with the utmoſt impetuoſity and ardour. The engagement began at four in the morning and laſted till ſix at night. The Spaniards diſplayed in every rencounter the moſt intrepid bravery; but, from the cauſes already mentioned, they did very little execution againſt the Engliſh; while many of their own ſhips were greatly damaged, and twelve of the largeſt were either run aground, or ſunk, or compelled to ſurrender.

It was now evident that the purpoſe of the armada was utterly fruſtrated. The Spaniſh admiral, after many unſucceſsful rencounters, prepared therefore to make his way home; but as the winds were contrary to his return through the Channel, he reſolved to take

the

Armadilla || Armagh.

the circuit of the iſland. The Engliſh fleet followed him for ſome time; and had not their ammunition fallen ſhort, through the negligence of the public offices in ſupplying them, they had obliged the armada to ſurrender at diſcretion. Such a concluſion of that vain-glorious enterpriſe would have been truly illuſtrious to the Engliſh, but the event was ſcarcely leſs fatal to the Spaniards. The armada was attacked by a violent ſtorm in paſſing the Orkneys; and the ſhips, having already loſt their anchors, were obliged to keep at ſea, while the mariners, unaccuſtomed to hardſhips, and unable to manage ſuch unwieldy veſſels, allowed them to drive on the Weſtern iſles of Scotland, or on the coaſt of Ireland, where they were miſerably wrecked. Not one half of the fleet returned to Spain, and a ſtill ſmaller proportion of the ſoldiers and ſeamen; yet, Philip, whoſe command of temper was equal to his ambition, received with an air of tranquillity the news of ſo humbling a diſaſter. "I ſent my fleet (ſaid he) to combat the Engliſh, not the elements. God be praiſed that the calamity is not greater!" This calamity, however, was ſenſibly felt all over Spain, and there was ſcarcely a ſingle family of rank in the kingdom that did not go into mourning for the death of ſome near relation; inſomuch that Philip, dreading the effect which this univerſal face of ſorrow might produce upon the minds of the people, imitated the conduct of the Roman ſenate after the battle of Cannæ, and publiſhed an edict to abridge the time of public mourning.

ARMADILLA, in Spaniſh America, denotes a ſquadron of men of war, to the number of ſix or eight from twenty-four to fifty pieces of cannon, which the king maintains, to prevent foreigners from trading with the Spaniards and the Indians, both in time of war and peace.

The veſſels of this armadilla are thoſe that have been ſo much talked of, under the name of *guarda coſtas*. They have even power to take all Spaniſh merchant ſhips they meet with on the coaſt that have not licenſes from the king.

The South ſea has its armadilla as well as the North ſea. The ordinary abode of the former are at Calao, a port of Lima; that of the latter at Carthagena.

ARMADILLO, in *Zoology*, a ſynonyme of the daſypus. See DASYPUS, MAMMALIA *Index*.

ARMAGEDDON, a place ſpoken of in the Revelation (xvi. 16.), which literally ſignifies the mountain of Mageddon or Megiddo, a city ſituated in the great plain at the foot of Mount Carmel, where King Joſiah received his mortal wound in the battle againſt Necho king of Egypt. At Armageddon, the three unclean ſpirits, coming out of the dragon's mouth, ſhall gather together the kings of the earth to the battle of the great day of God Almighty (Rev. xvi. 13, 14.) The word armageddon, according to Mr Poole, does not ſignify any particular place, but is here an alluſion, as ſome think, to that of Megiddo, mentioned Judges v. 19. where Barak overcame Siſera with his great army, and where Joſiah was ſlain (2 Kings xxiii. 30.) Others tranſlate this word, *the mountain of the goſpel*, and others, *the mountain of apples or fruits*.

ARMAGH, a county of Ireland, bounded by Louth on the ſouth; Lough-Neagh, on the north; Tyrone and Monaghan, on the weſt; and Down in part, on the eaſt, from which it is ſeparated by the river Newry. It is in length 32 miles, in breadth 73; and is divided into five baronies, containing about 170,620 acres. Both the air and ſoil are good, eſpecially the latter, which is ſaid to be the richeſt in Ireland; only there is a certain tract in it called the *Fewes*, that is *hilly* and *barren*. The members it ſends to parliament are ſix, viz. two for the city of Armagh, two for the county, and two for the borough of Charlemont.

Armagh || Armamaxi.

Armagh, ſtanding near the river Kalin, gives name to the county, and is the ſee of the primate of all Ireland. It is ſaid to have been founded by St Patrick in the fifth century: and in 1142, it was conſtituted an archbiſhopric, together with Dublin, Caſhel, and Tuam, by Cardinal Papyreo, with the conſent of the kings, dukes, biſhops, abbots, and ſtates of Ireland. This Papyreo was ſent into Ireland by Pope Eugenius, to reform the abuſes that had crept into the church diſcipline of that country. Here was anciently a famous monaſtery built by St Columbo, or Columbanus, about the year 610. The cathedral was often burnt, but as often rebuilt and enlarged, and particularly by Patrick Scanlain, about 1262. His ſucceſſor Nicholas, ſon of Moliſſa, beſides books, rich eccleſiaſtical veſtments, and other things, beſtowed on it an annual penſion of twenty marks. He appropriated alſo to his ſee the manor of Dromyſkin. He died the 10th of May, 1303. This town was firſt ſubjected to the Engliſh by John de Courcy; but afterwards entirely deſtroyed by Tir Oen, or O'Neal, in Queen Elizabeth's time. However, it was afterwards recovered, rebuilt, and garriſoned by the Engliſh.

The ſee of Armagh is valued in the king's books, by an extent taken anno 30th Henry VIII. at 183l. 17s. 5¼d. Iriſh money per annum, which amounts to 137l. 18s. 0¾. the difference between Iriſh and Sterling money being at that time one-fourth. But by an extent returned in the 15th of James I. it is valued at 400l. ſterling per annum, and pays ſo much firſt fruits to this day. It is reputed to be worth annually 8000l. The chapter of Armagh is compoſed of five dignitaries and four prebendaries, who have voices in every capitular act. The dignitaries are thus ranked, viz. a dean, chanter, chancellor, treaſurer, and archdeacon. There are alſo eight vicars choral, and an organiſt, attendant on the ſervice of the cathedral. The vicars choral were anciently fewer; and of the number only one prieſt. Primate Marſh added another prieſt, but without increaſing the number of vicars. In the year 1720, Primate Lindſay obtained a new charter for enlarging the number of the ſaid vicars to eight, and laid out upwards of 400l. on a purchaſe, in augmentation of the eſtate of the choir.

ARMAGNAC, formerly a province of Guienne in France, which with Gaſcony now forms the department of Gers, is 55 miles in length and 40 in breadth; bounded on the weſt by the river Garonne, on the ſouth by Bigorre and Bearn, on the weſt by Gaſcony, and on the north by Condomois and Agenois: Auch is the capital town. It is fertile in corn and wine, and carries on a conſiderable trade in brandy, wool, and bonchretin pears, which are excellent.

ARMAMAXI, in antiquity, a kind of Scythian chariots or carriages, compoſed of two wheels, variouſly

Armament || Armenia.

ously adorned with crowns, ſhields, breaſtplates, and other ſpoils, carried in proceſſion after the images of the gods and great men.

ARMAMENT, a large body of forces, raiſed and provided with the furniture of war, either for land or ſea ſervice.

ARMATURA, in a general ſenſe, is the ſame with what we otherwiſe call armour.

ARMATURA is more particularly uſed in the ancient military art, for a kind of exerciſe, performed with miſſive weapons, as darts, ſpears, arrows, and the like. In this ſenſe, armatura ſtands contradiſtinguiſhed from palaria; the latter being the exerciſe of the heavy-armed, the former of the light-armed.

The armatura was practiſed with great diligence among the Romans; they had their *campidoctores*, on purpoſe to inſtruct the *tyrones* or young ſoldiers in it. Under it were included the throwing of the ſpear or javelin, ſhooting with bows and arrows, &c.

ARMATURA is alſo an appellation given to the ſoldiers who were light armed.

ARMATURA is alſo a denomination given to the ſoldiers in the emperor's retinue. Of theſe we find two ſchools, mentioned in the *Notitia Imperii*, called the *armaturæ ſeniores* and *armaturæ juniores*. Their commander was entitled *tribunus armaturarum*.

ARMED, in the ſea language. A croſs bar ſhot is ſaid to be armed, when ſome rope yarn or the like is rolled about the end of the iron bar, which runs through the ſhot.

ARMED, in *Heraldry*, is uſed when the horns, feet, beak, or talons, of any beaſt or bird of prey, are of a different colour from the reſt of their body.

ARMED *Ship*, a veſſel occaſionally taken into the ſervice of the government in time of war, and employed to guard ſome particular coaſt, or attend on a fleet. She is therefore armed and equipped in all reſpects like a ſhip of war, and commanded by an officer of the navy, who has the rank of maſter and commander. All ſhips of this ſort are upon the eſtabliſhment of the king's ſloops, having a lieutenant, maſter, purſer, ſurgeon, &c.

ARMENE, or ARMINA, anciently a hamlet of Paphlagonia, (Ptolemy). The inhabitants encompaſſed it with a wall, becauſe of the coldneſs of the place, imagining by that means to render it warmer. But this proving ineffectual, gave riſe to the proverb *Armenen muro cingere*, uſed to expreſs ſome egregious folly.

ARMENIA, a country of Aſia, anciently divided into Armenia Major and Minor. Armenia Major, according to Strabo, was bounded on the ſouth by Mount Taurus, which ſeparated it from Meſopotamia; on the eaſt, by the two Medias; on the north by Iberia and Albania, or rather that part of Mount Caucaſus which ſurrounds them both; and on the weſt, by Armenia Minor, or the mountains Paryadres, ſome Pontic nations, and the Euphrates. The moſt conſiderable cities were Artaxata, Tigranocerta, and Theodoſiopolis. —Armenia Minor was bounded on the eaſt by the Euphrates; on the ſouth by Mount Taurus, which ſeparated it from Cilicia; on the weſt and north, by a long chain of mountains called in different places *Mons Scordiſcus*, *Amanus*, and *Antitaurus*, by which it was ſeparated from Cappadocia.

Whence this tract received the name of *Armenia* is not determined. The Greeks ſuppoſe it to be ſo called from one *Armenus*, who attended Jaſon in the Argonautic expedition, and afterwards ſettled in this country. Others, transforming Armenia into Aramia, derive its name from Aram the ſon of Shem, or from one of the kings of Armenia bearing that name. Bochart imagines it to be a contraction or compound of *Aar*, a Hebrew word ſignifying a "mountain," and *Minni*, ſignifying "metal," and which was the name of a province of Armenia mentioned by the prophet Jeremiah. Armenia.

Herodotus derives the ancient Armenians from the Phrygians, by reaſon that ſeveral Phrygian words were crept into the ancient Armenian language. But Strabo reckons them to have been originally Syrians, which Bochart looks upon to be the moſt probable opinion.

Armenia is ſaid to have been very early advanced to the honour of a kingdom. Beroſus makes one Sytha the firſt founder of this monarchy, whoſe ſucceſſor Bardanes, he ſays, was driven out by Ninus king of Aſſyria. Plutarch mentions one Araxes king of Armenia, who in a war with the Perſians, being aſſured of ſucceſs by an oracle, provided he ſacrificed his two daughters, cauſed the two daughters of one Mieſalcus, a nobleman of his court, to be ſacrificed in their ſtead, flattering himſelf that he thereby complied with the oracle. But Mieſalcus did not fail to revenge the death of his own daughters by putting the king's two daughters to death, and purſued himſelf ſo cloſely, that he was drowned in attempting to ſwim acroſs the Araxes, which was then called *Helmus*.

The Armenians were in proceſs of time ſubdued by the Medes, to whom Aſtyages made them tributaries, but allowed them to be governed by their own kings; but on the diſſolution of the Median empire by Cyrus, the kingdom was reduced to the form of a province, and they were governed by Perſian prefects or lieutenants. On the deſtruction of the Perſian empire by Alexander the Great, Armenia fell into the hands of the Macedonians; to whom it continued ſubject till the beginning of the reign of Antiochus the Great. This prince having appointed two prefects, called *Zadriades* and *Artaxias*, to govern Armenia, they excited the people to a revolt, and cauſed themſelves to be proclaimed kings of the provinces over which they preſided. Antiochus being then very young, they were attended with ſucceſs beyond their expectation; which encouraged them to attempt the enlargement of their territories. Accordingly, invading the neighbouring countries, they took from the Medes the provinces of Caſpiana, Phaunitis, and Baſoropida; from the Iberians Chorzena and Gogorena on the other ſide of the Cyrus; from the Chalybes and Moſſynæci, the provinces of Pareneta and Herexena, which bordered on Armenia Minor.

On this occaſion, the above-mentioned diviſion of the kingdom into Armenia Major and Minor firſt took place. Artaxias became king of Armenia Major and Zadriades of Armenia Minor; and this diſtinction ſubſiſts even at this day.

By whom Artaxias was ſucceeded is not known; neither have we any account of the tranſactions of his reign, farther than that Antiochus led a powerful army againſt him and Zadriades, but without being able to recover a ſingle province. Upon this he concluded a peace, deſigning to fall upon them at a proper opportunity;

Armenia. portunity; but they having entered into alliance with the Romans, by that means ſecured themſelves in the poſſeſſion of their kingdom. After this, Artaxias was defeated and taken priſoner by Antiochus Epiphanes; but ſomehow or other, ſeems to have been reſtored to his kingdom.

From this time we meet with a chaſm in the Armenian hiſtory for 70 years; during which all we know is, that Tigranes, the king's ſon, was delivered up as an hoſtage to the Parthians; from whence it is plain, that the Armenians had been carrying on an unſucceſsful war with that nation. On the news of his father's death, however, the Parthians ſet the young king at liberty, having firſt obliged him to give up a conſiderable part of his kingdom by way of ranſom.

Tigranes being thus reſtored to his father's kingdom, was prevailed upon in the beginning of his reign to enter into an alliance with Mithridates Eupator againſt the Romans, whoſe power began to give jealouſy to all the princes of Aſia. One of the articles of this treaty was, that Mithridates ſhould have the cities and conquered countries, and Tigranes the captives and plunder. In conſequence of this, Tigranes was to invade Cappadocia, which he had lately been obliged, by a decree of the ſenate of Rome, to give up to Ariobarzanes. But before either of the princes took the field, a marriage was ſolemnized with all poſſible magnificence between Tigranes and Cleopatra the daughter of Mithridates.

Immediately after the nuptials, Tigranes ſet out on his intended expedition; and Ariobarzanes, on the firſt news of his march, abandoned his kingdom and fled to Rome. Thus Tigranes, without fighting a ſtroke, enriched himſelf with the booty, and then proclaimed Ariarathes, Mithridates's ſon, king of Cappadocia, to the univerſal ſatisfaction of the people.

In the mean time, the Syrians being haraſſed with a long and inteſtine war of the Seleucidæ, invited Tigranes to come and take poſſeſſion of their country; which he accordingly did, and kept it for 18 years, till he was driven out by Pompey, and Syria reduced to the form of a Roman province. Encouraged by this ſucceſs, he next invaded Armenia Minor: defeated and killed King Artanes, who oppoſed him with a conſiderable army; and in one campaign made himſelf maſter of the whole kingdom. From Armenia Minor he marched againſt the Aſiatic Greeks, the Adiabenians, the Aſſyrians, and the Gordians, carrying all before him, and obliging the people wherever he came to acknowledge him ſovereign. From this ſecond expedition he returned home loaded with booty, which he ſoon after increaſed by the ſpoils of Cappadocia, invading that kingdom a ſecond time at the inſtance of Mithridates, who had been obliged by the Romans to withdraw his forces from thence. From Cappadocia Tigranes, beſides other booty, brought back into Armenia no fewer than 300,000 captives, having ſurrounded the country with his numerous forces in ſuch a manner that none could eſcape. Theſe, together with the priſoners he had taken in his two firſt expeditions, he employed in building the city of Tigranocerta, which they afterwards peopled.

In the mean time Mithridates, who had concluded a peace with the Romans for no other end than to gain time, ſent a ſolemn embaſſy to Tigranes, inviting him to enter into a ſecond alliance againſt the common enemy. This he at firſt declined; but in the end was prevailed upon by his wife Cleopatra to ſend him conſiderable ſupplies, though he never came heartily into the war, not caring to provoke the Romans, who on their part kept fair with him, taking no notice for the preſent of the ſupplies he had ſent Mithridates. That unfortunate prince being ſoon after defeated by Lucullus, was forced to fly for ſhelter into Armenia, where he met with a very cold reception from his ſon-in-law, who would neither ſee him, treat with him, nor own him as his relation; however, he promiſed to protect his perſon, and allowed him in one of his caſtles a princely retinue, and a table ſuitable to his former condition. Armenia.

Though this total overthrow of Mithridates might have opened the eyes of Tigranes, and made him oppoſe with all his might the growing power of the Romans, he fooliſhly left them to finiſh their conqueſt of Pontus, while he marched at the head of a very numerous army againſt the Parthians, with a deſign to recover from them the dominions they had formerly extorted from him before they ſet him at liberty. Theſe he eaſily retook; and not ſatisfied with what formerly belonged to him, he added to them all Meſopotamia, the countries that lay about Ninus and Arbela, and the fruitful province of Mygdonia; the Parthians, though at that time a mighty people, flying everywhere before him. From Meſopotamia Tigranes marched into Syria to quell a rebellion which had been raiſed by Cleopatra, ſurnamed *Selene;* who, after the death of her huſband Antiochus Pius, reigned jointly with her ſons in that part of Syria which Tigranes had not ſeized on. The malcontents were quickly reduced; and the queen herſelf was taken priſoner, and confined to the caſtle of Seleucia, where ſhe was ſoon after put to death by the king's orders. From Syria Tigranes paſſed into Phœnicia, which he ſubdued either entirely or in great part, ſpreading far and wide the terror of his arms, inſomuch that all the princes of Aſia, except thoſe who were in alliance with the Romans, either in perſon or by their deputies, ſubmitted and paid homage to the conqueror.

The king, having now ſubdued all Syria to the borders of Egypt, and being elated with a long courſe of victories and proſperous events, began to look upon himſelf as far above the level of other crowned heads. He aſſumed the title of *King of kings*, and had many kings waiting upon him as menial ſervants. He never appeared on horſeback without the attendance of four kings dreſſed in livery, who run by his horſe; and when he gave anſwers to the nations that applied to him, the ambaſſadors ſtood on either ſide the throne with their hands claſped together, that attitude being of all others then accounted among the orientals the greateſt acknowledgement of vaſſalage and ſervitude. In the midſt of all this haughtineſs, however, he was unexpectedly viſited by an ambaſſador from Lucullus the Roman general, who, without any ceremony, told him, that he came to demand Mithridates king of Pontus, who had taken refuge in his dominions, and, in caſe of his refuſal, to declare war againſt him. Notwithſtanding his high opinion of himſelf, Tigranes returned a mild anſwer to this meſſage: in which, however, he refuſed to deliver up his father-in-law; and being

Armenia. being highly provoked at Lucullus for not giving him the title of *King of kings* in his letter, he did not ſo much as beſtow upon him the title of *general* in his anſwer. In the mean time, being informed that Zarbienus king of the Gordians had entered into a private alliance with the Romans, he put him, his wife, and children to death; and then, returning into Armenia, received with the greateſt pomp imaginable his father-in-law Mithridates, whom till that time he had not admitted into his preſence, though he had reſided a year and eight months in his dominions. They had ſeveral private conferences; and at laſt Mithridates was ſent back to Pontus with 10,000 horſe, to raiſe there what diſturbances he could.

Lucullus, on the other hand, hearing the king's reſolution to protect Mithridates, immediately began his march for Armenia, at the head of only two legions of foot and 3000 horſe, having left 6000 men in Pontus to keep that country quiet. Having paſſed the Euphrates without oppoſition, he detached two parties; one to beſiege a city where he heard that Tigranes's treaſure and concubines were kept; and the other under Sextilius, to block up Tigranocerta, in order to draw the king to a battle. But Tigranes, after having put to death the ſcout that brought him the firſt intelligence of the approach of the Romans, made towards Mount Taurus, which he had appointed for the place of the general rendezvous. The Roman general then deſpatched Muræna in purſuit of the king; who, having overtaken him in a narrow paſs, defeated him, and, beſides all the baggage, carried off a great many priſoners, the king himſelf having fled in the beginning of the ſkirmiſh. After this, he ſent out ſeveral parties to ſcour the country, in order to prevent the innumerable forces of Tigranes from joining into one body. This, however, he was not able to effect; Tigranes was joined by ſuch numbers of Gordians, Medes, Adiabenians, Albanians, Iberians, &c. that, before he left Mount Taurus, his army conſiſted, according to Plutarch, of 150,000 foot armed cap-a-pee, 35,000 pioneers, 20,000 archers and ſlingers, and 55,000 horſe.

Lucullus was ſo far from being diſmayed at this formidable army, that the only fear he had was leſt the king ſhould follow the advice of Mithridates, which was, not to engage the Romans, but, by ravaging the country, diſtreſs them for want of proviſions. In order to draw him to a battle, therefore, he formed the ſiege of Tigranocerta, imagining that Tigranes would never ſuffer that fine city to be taken without making an attempt to relieve it. The event fully anſwered his expectations: Tigranes having called a council of war, it was unanimouſly reſolved to attack the Romans; and Taxilis, whom Mithridates ſent to diſſuade the king from venturing a battle, was in danger of loſing his head on account of the advice he gave. The Roman general, finding Tigranes diſpoſed to come to an engagement, left Muræna with 6000 men to carry on the ſiege, while he himſelf marched againſt the king's vaſt army with only 10,000 men according to ſome, and the higheſt computations make them no more than 18,000. The Romans were at firſt greatly diſheartened; but being encouraged by Lucullus, they immediately broke the Armenian army, who betook themſelves to flight almoſt at the firſt outſet. The Romans purſued them till night, making a moſt terrible ſlaughter. Plutarch informs us, that of the Armenians 100,000 foot were killed, and that very few of the cavalry eſcaped; whereas of the Romans only five men were killed and 100 wounded. Antiochus the philoſopher mentioning this battle, ſays, that the ſun never beheld the like: and Livy, that the Romans never fought to ſuch a diſadvantage; the conquerors not amounting to a twentieth part of the conquered. Tigranes in his flight having met with his ſon in as forlorn a condition as himſelf, reſigned to him his royal robes and diadem, deſiring him to ſhift for himſelf and ſave thoſe royal enſigns. The young prince delivered them to a truſty friend, who, being taken by the Romans, conſigned them to Lucullus. Armenia.

While the king was making his eſcape after this terrible overthrow, he was met by Mithridates, who was marching to his aſſiſtance at the head of a conſiderable army. The king of Pontus cheered up his ſon-in-law as well as he could, and encouraged him to continue the war: adviſing him, inſtead of fruitleſsly bewailing the preſent diſaſter, to rally his troops, raiſe new ſupplies, and renew the war, not queſtioning but that in another campaign he might repair all the loſſes he had ſuſtained: but while the two kings were conſulting upon theſe matters, Lucullus made himſelf maſter of Tigranocerta. From this city he marched into the ſmall kingdom of Gordyene, where he celebrated, with the utmoſt pomp, the obſequies of King Zarbienus, whom Tigranes had put to death, lighting the funeral pile with his own hand. In this kingdom, beſides immenſe ſums of gold and ſilver, he met with ſuch ſtore of proviſions as enabled him to carry on the war without putting the republic to any charge.

The two kings, having levied new forces, appointed their troops to rendezvous in the ſpacious plains on the other ſide of Mount Taurus; whereupon Lucullus leaving Gordyene, and paſſing by Mount Taurus, encamped cloſe by the enemy. Several ſkirmiſhes happened for ſome time between the two armies without any conſiderable advantage; but Lucullus could by no means draw them to a general engagement. Upon this he decamped, as if he deſigned to march to Artaxata and lay ſiege to that place, where Tigranes had left his wife and children, with great part of his treaſures. He had ſcarce formed his camp when the enemy appeared, and ſat down cloſe by him. Lucullus did not allow them to fortify their camp, but immediately attacked them, and having put them to flight after a faint reſiſtance, purſued them all night with great ſlaughter, took moſt of the chief officers priſoners, and returned the next day loaded with booty.

The Roman ſoldiers now, finding the cold very ſevere, though it was no later in the year than the autumnal equinox, requeſted their general to allow them to retire into winter quarters. This requeſt he rejected with indignation; upon which they mutinied. Lucullus did all he could to perſuade them to continue in their duty; and prevailed ſo far that they conſented to lay ſiege to Niſibis in hopes of booty. This place they took: and Lucullus, to the great ſatisfaction of his troops, took up his winter quarters there. The next year, however, his forces again mutinied, accuſing him of amaſſing immenſe wealth for himſelf; and throwing their empty purſes at his feet, told him, that

Armenia. as he enriched himſelf alone, he might carry on the war by himſelf. He endeavoured to appeaſe them as much as poſſible; but the ſedition being fomented by a party who favoured Pompey the Great, at that time aſpiring to the command of Lucullus's army, the latter found himſelf obliged to ſit ſtill and ſee Mithridates and Tigranes overrun Cappadocia, and recover all Armenia and great part of Pontus. They would have gained much greater advantages, had not a ſon of Tigranes taken arms againſt his father, and obliged him to divide his troops. The father and ſon coming to a pitched battle, the latter was defeated, and forced to ſave himſelf in Parthia, where he perſuaded Phraates, king of that country, to aſſiſt him with a numerous army againſt his father. Phraates having laid ſiege to Artaxata, Tigranes the elder was obliged to hide himſelf in the mountainous parts of his kingdom; upon which the king of Parthia returned home. Of this Tigranes the father being apprized, he immediately abandoned the faſtneſſes of the mountains; and falling upon his ſon at Artaxata, diſperſed the rebels with great ſlaughter; and entered his metropolis in triumph. Tigranes the ſon firſt fled to Mithridates; but finding him reduced to great ſtraits, having been overcome a few days before, with the loſs of 40,000 men, by Pompey, he went over to the Romans, and led them into Armenia againſt his father as an ally of Mithridates.

Tigranes, being now quite diſpirited, and unable to make head againſt the Romans, reſolved at once to ſubmit. Accordingly he waited on Pompey in his camp, and having delivered his ſword to two lictors, proſtrated himſelf before him, and laid his diadem at his feet. Pompey, however, gave him a gracious reception, reſtored him the kingdom of Armenia, but fined him of 6000 talents for making war on the Roman people without cauſe. As the king had appealed to the Roman general for juſtice againſt his ſon, Pompey heard both parties the next day, and made the ſon governor of Gordyene and Sophene; but the treaſures that were kept in the latter he adjudged to his father, becauſe without them he could not pay the fine. The ſon, being thus diſappointed, endeavoured firſt to make his eſcape, and afterwards, by private meſſengers, ſolicited the inhabitants not to deliver up the treaſures to his father. This being taken very much amiſs by Pompey, he cauſed him to be kept in irons; and even then he found means to ſtir up Phraates king of Parthia, whoſe daughter he had married, againſt the Romans, and to form a conſpiracy againſt his father's life; whereupon Pompey ſent him in chains to Rome, where he was kept priſoner in the houſe of L. Flavius a ſenator, till the tribuneſhip of P. Clodius, who, being bribed with a large ſum of money, ſet him at liberty in ſpite of Pompey and the ſenate.

Tigranes being now thoroughly humbled, willingly yielded to the Romans, Cappadocia, Syria, Cilicia, and that part of Phœnicia which he poſſeſſed, contenting himſelf with his paternal kingdom; and not only paid the fine laid upon him, but made large preſents to Pompey, and all the officers of his army, which procured him the title of *the friend and ally of the Roman people*. He afterwards entered into a war with Phraates king of Parthia, by whom he was overcome, and would have been driven out of his kingdom, had not a peace been brought about by the mediation of Pompey. He ever after cultivated a ſtrict friendſhip with the Romans; inſomuch that he not only refuſed to receive Mithridates, who fled to him after he had been routed by Pompey near Mount Stella, but even offered a reward of 100 talents to any one that would put him to death. His ſecond ſon alſo, by name Sariaſter, took up arms againſt him; but by the aſſiſtance of the Romans, that rebellion was ſoon quelled. He died in the 85th year of his age; and was ſucceeded by his ſon Artuaſdes, called by Joſephus *Artabazes*, by Oroſius *Artabanes*, and by others *Artoadiſtes*. Armenia.

From this time to the time of Trajan, Armenia was governed by its own kings; but as they were plainly vaſſals to the Romans, though they did not take that title till the reign of the emperor Nero, their hiſtory falls to be conſidered under that of the Romans.

By Trajan the kingdom of Armenia Major was reduced to the form of a Roman province; but it ſoon recovered its liberty, and was again governed by its own kings in the reigns of Conſtantine the Great, and his ſucceſſor, to whom the kings of Armenia were feudatories. In the reign of Juſtin II. the Saracens ſubdued and held it till the irruption of the Turks, who poſſeſſed themſelves of this kingdom, and gave it the name of *Turcomania*. The Turks, after the reduction of Armenia, invaded Perſia, and other countries ſubject to the emperors of the eaſt; which gave the Armenians an opportunity of ſhaking off the Turkiſh yoke, and ſetting up kings of their own, by whom they were governed till the country was again ſubdued by Occadan, or, as ſome ſtyle him *Heccata*, the ſon of Cingis, and firſt cham of the Tartars. Neither was the conqueſt of Armenia by the Tartars ſo abſolute as to extirpate the race of their kings; ſeeing we read of Haithon, ſurnamed the *Armenian*, reigning ſome time after, and going in perſon to treat with Mungo, the great cham of Tartary, of the concerns of his kingdom; and in our chronicles we find mention made of Leo king of Armenia, who, in the reign of Richard II. came into England to ſue for aid againſt the Turks, by whom he had been driven from his kingdom. In the year 1472 of the Chriſtian era, Uſſan Caſſanes king of Armenia ſucceeding to the crown of Perſia, made Armenia a province of that empire; in which ſtate it continued till the year 1522, when it was ſubdued by Selim II. and made a province of the Turkiſh empire. Some ſay that Selim I. reduced it on his return from Perſia, where he had gained a complete victory over the great Sophi Iſmael. But Sanſovin aſſures us, that in the reign of Selim I. who died in 1520, both the Leſſer and Greater Armenia had their own kings; and adds, that Selim cauſed the head of the king of the Leſſer Armenia to be cut off and ſent to Venice as a mark of his victory. We read nowhere elſe of any kings of Armenia after it became a province of Perſia. Be that as it will, the Turkiſh annals cited by Calviſius inform us, that Selim II. conquered Armenia in 1522, ſince which time it has ever continued ſubject to the Turks, except the eaſtern part, which the Perſians are maſters of to this day.

Concerning Armenia Minor, we find very little recorded, except what has been already mentioned, and what falls under the Roman hiſtory. It was made a Roman province by Veſpaſian, continued ſo till the diviſion

Armenia. division of the empire, when it was ſubjected to the emperors of the eaſt; and, on the decline of their power, was ſubdued firſt by the Perſians, and afterwards by the Turks, who gave it the name of *Geneeh*, and have kept it ever ſince.

This country is ſtill divided into the Great and Small. Great Armenia comprehends what is now called *Turcomania*. It has Georgia on the north, from which it is ſeparated by high mountains; the river Euphrates on the weſt; Diarbeker, Curdiſtan, and Aderbijan, on the ſouth; and Shirvan on the eaſt. The chief towns in that part of Armenia belonging to Turkey are Arzum the capital, near the ſprings of the Euphrates, a large city and a great thoroughfare for the caravans between Turkey and Perſia; Kara, a ſtrong city, head of the government of the ſame name; Bayazid, a republic of Curds, near Mount Ararat: Baha, another republic of the ſame; and Van or Wan, on the lake Van, the head of a government of the ſame name; with other towns of leſs note. That part of Armenia ſubject to Perſia is chiefly contained in the province of Aran, in which are ſeveral fine towns; as, Erivan or Rivan, the capital of the whole; Ganjals, one of the fineſt cities in Perſia, in the north of the province, near the Kur; Kapan, on the ſouth ſide, near the Aras; beſides Nakſivan, Aſtabad Julfa, Ordabad, Baylakan or Pilkan, on the Aras; Berdah and Shilkah on the Kur.

The country in general is full of mountains and valleys, lakes, and rivers; particularly the country about the Three Churches, near Erivan, is admirably fine, being full of rivulets, which render it extremely fruitful. Beſides great quantities of all ſorts of grain, here are fields of a prodigious extent covered with tobacco: but it is not a native of the place, though ſuppoſed by ſome to be the terreſtrial paradiſe; for it all came originally from America. The reſt of the country produces rice, cotton, flax, melons, and grapes: in ſhort, there is nothing wanting but olives; which is by ſome thought to prove that the ark could not reſt on Mount Ararat, becauſe the dove brought an olive branch in her mouth, and this tree never leaves a place where it once grew. It ſeems, however, to have been otherwiſe anciently; for Strabo tells us, that the olive grew in Gogarene, a province of Armenia. They get oil to burn from the ricinus, and uſe linſeed oil in the kitchen. The water melons are as cool as ice in the hotteſt day, and melt in the mouth; the beſt are produced in the ſalt lands, near the Three Churches and the river Aras. After rain, the ſea ſalt lies in cryſtals upon the fields, and even crackles under the feet. About ten miles from the Three Churches, in the road to Teflis, there are pits or quarries of foſſil ſalt, which yield enough to ſupply all Perſia, without being exhauſted: they cut it into large pieces like ſtone, and each buffalo carries two of them; the mountain from whence it is dug is nothing but a maſs of ſalt, which appears like a rock of ſilver when the ſun ſhines on the places not covered with earth.

This country has been remarkable for its extreme cold from the remoteſt antiquity; Sir John Chardin tells us, that he found ice in the rivulets in the mornings even of the month of July. In many places, alſo, if they had not the convenience of watering their grounds, they would be almoſt entirely barren.

The Armenians are an ancient, civil, polite people, Armenia. ſcarce troubling themſelves about any thing elſe but trade, which they carry on in moſt parts of the world, by which means they have ſpread themſelves over the eaſt, and alſo a great part of Europe; and wherever they come, commerce is carried on with ſpirit and advantage.

The religion of the Armenians is the Chriſtian, of the Eutychian ſect: that is, they own but one nature in Jeſus Chriſt; and when they ſpeak of the hypoſtatical union, that he is perfect God and perfect man without mixture. They have a high eſteem for a book they call the *Little Goſpel*, which treats of the infancy of Jeſus, and ſays that the Virgin Mary being pregnant, her ſiſter Salome accuſed her of having proſtituted herſelf; to which the Virgin anſwered, that ſhe needed only to lay her hand on her belly, and ſhe would know how ſhe came to be with child: this Salome accordingly did, and fire came out of her belly, which conſumed the half of her arm; upon which ſhe acknowledged her fault, and drew it back; after which it was healed by putting it to the ſame place.

The Armenian clergy conſiſt of patriarchs, archbiſhops, doctors, ſecular prieſts, and monks. The ſecular prieſts are not allowed to marry a ſecond time; and therefore they take care to chooſe young healthy wives; they maintain themſelves and families by following ſome occupation, inſomuch that they have hardly time to perform their eccleſiaſtical functions: they lie in the churches on the vigils of thoſe days they are obliged to officiate.

The Armenian monks are of the order of St Baſil; and every Wedneſday and Friday they eat neither fiſh, nor eggs, nor oil, nor any thing made of milk, and during Lent they live upon nothing but roots; they are allowed wine only on the Saturday in the Holy Week, and meat on the Eaſter Sunday. Beſides the great Lent they have four others of eight days each, which are inſtituted to prepare for the four great feſtivals, of the Nativity, the Aſcenſion, the Annunciation, and of St George; in which times they muſt not ſo much as ſpeak of eggs, fiſh, oil, or butter.

The Armenians have ſeven ſacraments; baptiſm, confirmation, penance, the euchariſt, extreme unction, orders, and matrimony. In baptiſm, the child is plunged three times into the water, and the ſame form of words that is uſed with us is repeated every time; the prieſt then puts a ſmall cord made with ſilk and cotton on the neck of the infant, and anoints his forehead, chin, ſtomach, arm pits, hands, and feet, making the ſign of the croſs on each part. When the child is baptized, he is carried home by the godfather with the ſound of drums and trumpets. The women do not go to church till 40 days after their delivery; and they obſerve many Jewiſh cuſtoms.

At the communion, to which infants of two or three months old are admitted, the prieſts give a piece of the conſecrated hoſt ſoaked in the conſecrated wine. The elements are covered with a great veil, and placed in a cupboard near the altar, on the ſide of the goſpels. When the prieſt takes the chalice and pattin, he is followed by his deacons and ſubdeacons, with flambeaux and plates of copper furniſhed with bells: in this manner, with a cenſer before him, he goes in proceſſion round the ſanctuary: he then ſets them on the altar, pronounces

Armenian Armillary.

pronounces the words of conſecration, and turns himſelf to the people, who fall down, kiſs the earth, and beat their breaſts; then, after taking it himſelf, he diſtributes the hoſt ſoaked in wine to the people.

The Armenians ſeem to place the chief part of their religion in faſtings and abſtinences: and among the clergy, the higher the degree the lower they muſt live; inſomuch that it is ſaid the archbiſhops live on nothing but pulſe. They conſecrate holy water but once a-year; at which time every one fills a pot and carries it home, which brings in a conſiderable revenue to the church.

ARMENIACA. See PRUNUS.

ARMENIAN, ſomething belonging to or produced in Armenia: thus we ſay, *Armenian bole*, *Armenian ſtone*, &c. See BOLE, and *ARMENUS Lapis*.

ARMENTIERS, a ſmall handſome town of the Netherlands, in the county of Flanders, and diſtrict of Ypres. It was taken by Lewis XIV. in 1667, who diſmantled it; and it now belongs to the French. It is ſeated on the river Lis. E. Long. 3. 3. N. Lat. 50. 40.

ARMENUS LAPIS, *Armenian ſtone*, in *Natural Hiſtory*, a mineral ſubſtance, which is but improperly called a *ſtone*; being no other than an ochreous earth, and properly called *blue ochre*. It is a very valuable ſubſtance in painting, being a bright and lively blue. It was in ſo high eſteem as a paint among the ancients, that counterfeits were continually attempted to ſerve in its place. Theophraſtus had recorded it as a thing judged worthy a place in the Egyptian annals, which of their kings had the honour of inventing the factitious kind; and he tells us the genuine native ſubſtance was a thing of that value, that preſents were made of it to great perſons, and that the Phœnicians paid their tribute in it.—It is a very beautiful earth, of an even and regular texture; and of a fine blue, ſometimes deeper, ſometimes paler, and frequently mixed with green. It is ſoft, tender, and light; of an even, but ſomewhat duſty ſurface: it adheres firmly to the tongue, and is dry, but not harſh to the touch. It eaſily breaks between the fingers, and does not ſtain the hands. It is of a brackiſh diſagreeable taſte, and does not ferment with acids. It is a very ſcarce foſſil; but is found very pure, though but in ſmall quantities, in the mines at Goſſelaer in Saxony. It is frequently found ſpotted with green, and ſometimes with black; and very often is mixed among the green ochre, called *berggruen* by the Germans, which has thence been erroneouſly called by its name. See further the article BICE.

ARMIERS, a town of Hainault, in the French Netherlands, ſeated on the river Sambre. E. Long. 3. 45. N. Lat. 50. 15.

ARMIGER, a title of dignity, belonging to ſuch gentlemen as bear arms; and theſe are either by courteſy, as ſons of noblemen, eldeſt ſons of knights, &c.; or by creation, ſuch as the king's ſervants, &c. See ESQUIRE.

ARMILLARY, in a general ſenſe, ſomething conſiſting of rings or circles.

ARMILLARY Sphere, an artificial ſphere compoſed of a number of circles of the mundane ſphere, put together in their natural order, to caſe and aſſiſt the imagination in conceiving the conſtitution of the heavens, and the motions of the celeſtial bodies. The armillary ſphere revolves upon its axis within a ſilvered horizon, which is divided into degrees, and moveable every way upon a braſs ſupporter. The other parts are the equinoctial, zodiac, meridian, the two tropics, and the two polar circles. See GEOGRAPHY.

Armilluſtrium, Arminians.

ARMILUSTRIUM, in Roman antiquity, a feaſt held among the Romans, in which they ſacrificed, armed, to the ſound of trumpets.

ARMINIANS, a religious ſect, or party, which aroſe in Holland, by a ſeparation from the Calviniſts. They followed the doctrine of Arminius (ſee the next article); who, thinking the doctrine of Calvin, with regard to free-will, predeſtination, and grace, too ſevere, began to expreſs his doubts concerning them in the year 1591; and upon further inquiry adopted ſentiments more nearly reſembling thoſe of the Lutherans than of the Calviniſts. After his appointment to the theological chair at Leyden, he thought it his duty to avow and vindicate the principles which he had embraced; and the freedom with which he publiſhed and defended them expoſed him to the reſentment of thoſe that adhered to the theological ſyſtem of Geneva, which then prevailed in Holland; but his principal opponent was Gomar, his colleague. The controverſy which was thus begun, became more general after the death of Arminius, in the year 1609, and threatened to involve the United Provinces in civil diſord. The Arminian tenets gained ground under the mild and favourable treatment of the magiſtrates of Holland, and were adopted by ſeveral perſons of merit and diſtinction. The Calviniſts, or Gomariſts, as they were now called, appealed to a national ſynod: accordingly the ſynod of Dort was convened by order of the States General, in 1618, and was compoſed of eccleſiaſtical deputies from the United Provinces, as well as from the reformed churches of England, Heſſia, Bremen, Switzerland, and the Palatinate. The principal advocate in favour of the Arminians was Epiſcopius, who, at that time, was profeſſor of divinity at Leyden. It was firſt propoſed to diſcuſs the principal ſubjects in diſpute, and that the Arminians ſhould be allowed to ſtate and vindicate the grounds on which their opinions were founded: but ſome difference ariſing as to the proper mode of conducting the debate, the Arminians were excluded from the aſſembly, their caſe was tried in their abſence; and they were pronounced guilty of peſtilential errors, and condemned as corrupters of the true religion. In conſequence of this deciſion, they were treated with great ſeverity; they were deprived of all their poſts and employments; their miniſters were ſilenced, and their congregations were ſuppreſſed. However, after the death of Prince Maurice, who had been a violent partizan in favour of the Gomariſts, in the year 1625, the Arminian exiles were reſtored to their former reputation and tranquillity; and under the toleration of the ſtate, they erected churches and founded a college at Amſterdam, appointing Epiſcopius to be the firſt theological profeſſor. The Arminian ſyſtem has very much prevailed in England ſince the time of Archbiſhop Laud, and its votaries in other countries are very numerous.

The diſtinguiſhing tenets of the Arminians may be comprised

Arminians. comprised in the following five articles; relating to predestination, universal redemption, the corruption of man, conversion, and perseverance.

1. "With respect to the first, they maintained, "That God, from all eternity, determined to bestow salvation on those who he foresaw would persevere unto the end in their faith in Christ Jesus; and to inflict everlasting punishments on those who should continue in their unbelief, and resist unto the end his divine succours: so that election was conditional, and reprobation in like manner the result of foreseen infidelity and persevering wickedness."

2. On the second point the Arminians taught, "That Jesus Christ, by his sufferings and death, made an atonement for the sins of all mankind in general, and of every individual in particular; that, however, none but those who believe in him can be partakers of their divine benefit."

3. On the third article, they held, "That true faith cannot proceed from the exercise of our natural faculties and powers, nor from the force and operation of free will; since man, in consequence of his natural corruption, is incapable either of thinking or doing any good thing; and that therefore it is necessary, in order to his conversion and salvation, that he be regenerated and renewed by the operation of the Holy Ghost, which is the gift of God through Jesus Christ."

4. "That this divine grace, or energy of the Holy Ghost, begins and perfects every thing that can be called good in man, and consequently all good works are to be attributed to God alone; that, nevertheless, this grace is offered to all; and does not force men to act against their inclination, but may be resisted and rendered ineffectual by the perverse will of the impenitent sinner." Some modern Arminians interpret this and the last article with a greater latitude.

5. "That God gives to the truly faithful, who are regenerated by his grace, the means of preserving themselves in this state;" and though the first Arminians made some doubt with respect to the closing part of this article, their followers uniformly maintain, "that the regenerate may lose true justifying faith, forfeit their state of grace, and die in their sins."

The modern system of Arminianism likewise, founded on a comprehensive plan projected by Arminius himself, as appears from a passage in his last will, extends the limits of the Christian church, and relaxes the bonds of fraternal communion in such a manner, that Christians of all sects and denominations, whatever their sentiments and opinions may be, Papists excepted, may be formed into one religious body, and live together in brotherly love and concord. But, in order to avoid the reproach of being altogether unconnected by any common principles, Episcopius drew up a confession of faith, expressed for the most part in words and phrases of Holy Scripture, which the Arminians have generally adopted, though not enjoined upon them by any authoritative obligation. The Arminians are also called *Remonstrants*, from an humble petition, entitled their *Remonstrance*, which, in the year 1610, they addressed to the States of Holland. Their principal writers are Arminius, Episcopius, Vorstius, Grotius, Curcellæus, Limborch, Le Clerc, and Wetstein; not to mention many others of more modern date.

ARMINIUS, James, whose real name in Low Dutch was James Harmanni, a famous Protestant divine, from whom the modern sect of Arminians (see the preceding article) take their name, was born at Oude water, in Holland, in 1560. He was ordained minister at Amsterdam on the 11th of August 1588; where he soon distinguished himself by his sermons, which were remarkable for their solidity and learning, and gained him universal applause: but Martin Lydias, professor of divinity at Franeker, judging him a fit person to refute a writing in which Beza's doctrine of predestination had been attacked by some ministers of Delft, Arminius at his entreaties undertook the task; but upon thoroughly examining the reasons on both sides, he came into the opinions he proposed to destroy, and afterwards went still farther than the ministers of Delft had done. In 1600, he opposed those who maintained that ministers should subscribe the confession and catechism every year. In 1602, a pestilential disease raged at Amsterdam, during which he acted with the greatest resolution and courage, in assisting the poor, and comforting the sick; and Lucas Trelcatius and Francis Junius dying of that disease at Leyden, the curators of that university chose Arminius professor of divinity there, and he was afterwards made doctor of divinity. Disputes upon grace were soon after kindled in that university; and he was at length engaged in a new contest, occasioned by a disputation of his concerning the divinity of the Son. These contests, his continual labour, and the concern of seeing his reputation blasted by a multitude of slanders in relation to his opinions, impaired his health, and threw him into a fit of sickness, of which he died on the 19th of October 1609. Arminius was esteemed an excellent preacher: his voice was low, but very agreeable; and his pronunciation admirable: he was easy and affable to persons of all ranks, and facetious in his conversation amongst his friends. His great desire was, that Christians would bear with one another in all controversies which did not affect the fundamentals of their religion; and when they persecuted each other for points of indifference, it gave him the utmost dissatisfaction. The curators of the university of Leyden had so great a regard for him, that they settled a pension upon his wife and children. He left several works, viz. 1. Disputationes de diversis Christianæ religionis capitibus. 2. Orationes, itemque tractatus insigniores aliquot. 3. Examen modesti libelli Gulielmi Perkinsi de prædestinationis modo et ordine, itemque de amplitudine gratiæ divinæ. 4. Analysis capitis noni ad Romanos. 5. Dissertatio de vero et genuino sensu capitis septimi epistolæ ad Romanos. 6. Amica collatio cum D. Francisco Junio de prædestinatione per literas habita. 7. Epistola ad Hippolytum à collibus." Arminius ‖ Armoisin.

ARMIRO, a town of Macedonia, in European Turkey; seated on the gulf of Velo. E. Long. 23. 40. N. Lat. 38. 34.

ARMISTICE, in military affairs, a temporary truce or cessation of arms for a very short space of time. The word is Latin, *armistitium*; and compounded of *arma*, "arms," and *sto*, "to stand, or stop."

ARMOISIN, a silk stuff, or kind of taffety, manufactured in the East Indies, at Lyons in France, and at Lucca in Italy. That of the Indies is slighter than those made in Europe.

ARMONIAC

Armoniac || Armourer.

ARMONIAC. See AMMONIAC, CHEMISTRY *Index*.

ARMONICA. See HARMONICA.

ARMORIAL, ſomething relating to arms or coats of arms. See ARMS and HERALDRY.

ARMORIC, or AREMORIC, ſomething that belongs to the province of Bretagne, or Britanny, in France. The name *Armorica* was anciently given to all the northern and weſtern coaſt of Gaul, from the Pyrenees to the Rhine; under which name it was known even in Cæſar's time. The word is of Bas Breton origin, and denotes as much as *maritime*; compounded, according to M. Menage, of *ar*, "upon," and *more*, "ſea."

ARMORIST, a perſon ſkilled in the knowledge of armour.

ARMORUM CONCUSSIO; the claſhing of arms practiſed by the Roman armies previous to an engagement, and intended to ſtrike a panic into their enemies; it always followed the claſſicum and the barritus. See CLASSICUM and BARRITUS.

ARMOUR, a defenſive habit, wherewith to cover and ſecure the body from the attacks of an enemy. In ancient ſtatutes this is frequently called *harneſs*.—Parts of armour are, the buckler, cuiraſs, helmet, coat of mail, gauntlet, &c.

A complete armour anciently conſiſted of a caſque or helm, a gorget, cuiraſs, gauntlets, taſſes, braſſets, cuiſhes, and covers for the legs, to which the ſpurs were faſtened. This they called *armour cap-a-pie*; and was the wear of the cavaliers and men at arms.—The infantry had only part of it; viz. a pot or head-piece, a cuiraſs, and taſſes; but all light. Laſtly, The horſes themſelves had their armour, wherewith to cover the head and neck. Of all this furniture of war, ſcarce any thing is now retained except the cuiraſs; the gorget, or neck-piece, worn by officers, being at preſent only a badge of honour, and of no defence.

The gallantry of going to the battle naked, without any defenſive armour, prevailed ſo far, that the French, during the reign of Louis XIV. were obliged to be continually iſſuing ordonnances to reſtrain it; in conſequence of which the general officers, and thoſe of the cavalry, were obliged to reſume the cuiraſs, which yet has been but ill obſerved.

ARMOUR, *Coat*, is the eſcutcheon of any perſon, or family, with its ſeveral charges, and other furniture; as mantling, creſt, ſupporters, motto, &c. Thus we ſay, a gentleman of coat armour; meaning one who bears arms.

ARMOURER, a maker of arms, or armour.—The Roman armourers were diſpoſed in certain places in the empire, it being forbid either to ſell, or buy, or make arms elſewhere. They were exempt from all offices and taxes, and received a ſalary from the public.

When once they had taken the employment on themſelves, neither they, nor their children, were allowed to quit it. To prevent this, they had a kind of note, or ſtigma, impreſſed on the arm, whereby they might be known. If any of them fled, or ſecreted their ware, the reſt were obliged to anſwer for him; on account of which, the effects of ſuch as died without a legal heir went to the college. There were 15 armamentaries, or repoſitories of arms, in the Eaſtern empire, placed near the frontiers, and 19 in the Weſtern.

ARMOURER *of a ſhip*, a perſon whoſe office is to take care that the arms be in a condition fit for ſervice. Armoury || Arms.

ARMOURY, a ſtorehouſe of arms, or a place wherein military habiliments are kept, to be ready for uſe. There are armouries in the Tower, and in all arſenals, citadels, caſtles, &c.

ARMOURY is alſo uſed for a branch of heraldry; being the knowledge of coat armours, as to their blazons, and various intendments.

ARMOZA, or HARMOZIA, a town in Caramania, at the mouth of the Anamis, which falls into the Perſian gulf (Arrian); *Armuza*, (Ptolemy); and from this the neighbouring iſland, and a ſmall kingdom, take the modern name of *Ormus*. E. Long. 56. 17. N. Lat. 27. 0.

ARMS, ARMA, in a general ſenſe, includes all kinds of weapons, whether for defence or offence. Nicod derives the word from the Latin phraſe *quod operiant armos*, becauſe they cover the ſhoulders or ſides; but Varro derives *arma*, *ab arcendo*, *eo quod arceant hoſtes*. It is ſuppoſed that the firſt artificial arms were of wood, and were only employed againſt beaſts; and that Belus, the ſon of Nimrod, was the firſt that waged war: whence, according to ſome, came the appellation *bellum*. Diodorus Siculus takes Belus to be the ſame with Mars, who firſt trained ſoldiers up to battle.—Arms of ſtone, and even of braſs, appear to have been uſed before they came to iron and ſteel. Joſephus aſſures us, that the patriarch Joſeph firſt taught the uſe of iron arms in Egypt, arming the troops of Pharaoh with a caſque and buckler.

What contributed moſt to render the Romans maſters of the world, was, that having ſucceſſively warred againſt all nations, they conſtantly renounced their own methods, arms, &c. whenever they met with better. Thus Romulus during his war with the Sabines, a bold and warlike nation, adopted their broad buckler in lieu of the ſmall Argian buckler, which he had uſed till that time.

The principal arms of the ancient Britons were hatchets, ſcythes, lances, ſwords, and bucklers: the Saxons, &c. brought in the halbard, bow, arrows, arbaliſts, &c. By the ancient laws of England, every man was obliged to bear arms, except the judges and clergy. Under Henry VIII. it was expreſsly enjoined on all perſons to be regularly inſtructed, even from their tender years, in the exerciſe of the arms then in uſe; viz. the long bow and arrows: and to be provided with a certain number of them. 33 Hen. VIII.

ARMS, *Arma*, in *Law*, are extended to any thing which a man takes in his hand in his wrath, to caſt at, or ſtrike another.

By the common law, it is an offence for perſons to go or ride armed with dangerous weapons: but gentlemen may wear common armour, according to their quality, &c. 3d Inſt. The king may prohibit force of arms, and puniſh offenders according to law; and herein every ſubject is bound to be aiding. Stat. 7. Edw. I. None ſhall come with force and arms before the king's juſtices, nor ride armed in affray of the peace, on pain to forfeit their armour, and to ſuffer impriſonment, &c. 2 Edw. III. c. 3.

The importation of arms and ammunition are prohibited by 1 Jac. II. c. 8. and by 1 W. and M. ſtat. 2. c. 2. Proteſtant ſubjects may have arms for their defence.

Arms. fence. So likewiſe arms, &c. ſhipped after prohibition, are forfeited by 29 Geo. I. c. 16. ſec. 2.

Arms of offence in uſe among us at preſent are, the ſword, piſtol, muſket, bayonet, pike, &c.

The arms of the Highlanders are, the broad ſword, target, poniard, and whinyar or durk, &c. There are ſeveral acts of parliament for diſarming the Highlanders; ſee 1 Geo. I. c. 54.; 11 Geo. I. c. 26.; 19 Geo. II. c. 39.; 21 Geo. II. c. 34.; 26 Geo. II. c. 22. and 29.

Fire Arms are thoſe charged with powder and ball: ſuch are cannon, mortars, and other ordnance; muſkets, carabines, piſtols, and even bombs, grenadoes, carcaſſes, &c. In the Hiſtory of the Royal Academy for the year 1707, we have an account of ſome experiments made with fire arms, differently loaded, by M. Caſſini. Among other things he obſerves, that by loading the piece with a ball which is ſomewhat leſs than the calibre, and only laying a little gunpowder below the ball and a good deal above it, it will yield a vehement noiſe, but have no ſenſible effect or impulſe on the ball. This he takes to have been all the ſecret of thoſe people who pretended to ſell the art of rendering one's ſelf invulnerable, or ſhot proof.

Arms, paſs of, was a kind of combat in uſe among the ancient cavaliers.

Arms, ſtand of. A ſtand of arms ſignifies a muſket, a bayonet, a ſword, belt, and cartridge-box.

Arms of parade or *courteſy*, were thoſe uſed in the ancient juſts and tournaments; which were commonly unſhod lances, ſwords without edge or point, wooden ſwords, and even canes.

Arms denote the natural weapons, or parts of defence, of beaſts: as claws, teeth, tuſks of elephants, beaks of birds, &c.

Arms, are alſo uſed figuratively for the profeſſion of a ſoldier. Thus we ſay, He was bred to arms.

Arms, or *Armories*, are alſo uſed in heraldry for marks of dignity and honour, regularly compoſed of certain figures and colours, given or authorized by ſovereigns, and borne on banners, ſhields, coats, &c. for the diſtinction of perſons, families, and ſtates; and paſſing by deſcent to poſterity. They are called *arms*, in regard they are borne principally on the buckler, cuiraſs, banners, and other apparatus of war. They are alſo called *coats of arms*, *coat armour*, &c. becauſe anciently embroidered on ſurcoats, &c. See Heraldry. Some will have the name to have been firſt occaſioned by the ancient knights, who in their juſts and tournaments bore certain marks (which were frequently their miſtreſs's favours) in their armour, i. e. their helmets or ſhields, to diſtinguiſh them from each other.

Arms at preſent follow the nature of titles, which being made hereditary, theſe are alſo become ſo, being the ſeveral marks for diſtinguiſhing of families and kindreds, as names are of perſons and individuals.

Arms are variouſly diſtinguiſhed by the *Heralds*.

Arms of Alliance, are thoſe which families or private perſons join to their own, to denote the alliances which they have contracted by marriage.

Arms aſſumptive, are ſuch as a man has a right to aſſume of himſelf, in virtue of ſome gallant action. As, if a man who is no gentleman of blood, nor has coat armour, takes a gentleman, lord, or prince, priſoner in any lawful war; he becomes entitled to bear the ſhield of ſuch priſoner, and enjoy it to him and his heirs. The foundation hereof is that principle in military law, that the dominion of things taken in lawful war paſſes to the conqueror. Arms.

Arms, canting, are thoſe wherein the figures bear an alluſion to the name of the family. Such are thoſe of the family of La Tour in Auvergne, who bear a tower; that of the family of Prado in Spain, whoſe field is a meadow. Moſt authors hold theſe the moſt noble and regular, as is ſhown by an infinity of inſtances produced by Father Varrenne and Menetrier.—They are much debaſed when they come to partake of the *Rebus*.

Arms, charged, are ſuch as retain their ancient integrity and value, with the addition of ſome new honourable charge or bearing, in conſideration of ſome noble action.

Arms of community, are thoſe of biſhoprics, cities, univerſities, and other bodies corporate.

Arms of conceſſion, or augmentation of honour, are either entire arms, or elſe one or more figures given by princes, as a reward for ſome extraordinary ſervice.

Arms of dominion, are thoſe which emperors, kings, and ſovereign ſtates bear; being annexed to the territories which they poſſeſs. Thus the three lions are the arms of England; the fleurs de lys thoſe of France, &c.

Arms of family, or *paternal arms*, are ſuch as belong to a particular family, and which no other perſon has a right to aſſume.

Arms, full, or *entire*, are ſuch as retain their primitive purity, integrity, or value; without any alterations, diminutions, abatements, or the like. It is a rule, that the ſimpler and leſs diverſified the arms, the more noble and ancient they are. For this reaſon Garcias Ximenes, firſt king of Navarre, and his ſucceſſors for ſeveral ages, bore only gules, without any figure at all.

The arms of princes of the blood, of all younger ſons, and junior families, are not pure and full; but diſtinguiſhed and diminiſhed by proper differences, &c.

Arms of patronage, are thoſe which governors of provinces, lords of manors, &c. add to their family arms, in token of their peculiar ſuperiority and juriſdiction.

Arms of pretenſion, are thoſe of ſuch kingdoms or territories to which a prince or lord has ſome claim, and which he adds to his own, though the kingdoms or territories be poſſeſſed by a foreign prince or other lord. Thus the kings of England have quartered the arms of France with their own, ever ſince the claim of Edward III. to that kingdom, in 1330.

Arms of ſucceſſion, are aſſumed by thoſe who inherit eſtates, manors, &c. by will, entail, or donation, and which they either impale or quarter with their own arms.

Arms are alſo ſaid to be *parted*, *couped*, *quartered*, &c.

Arms are ſaid to be *falſe* and *irregular*, when there is ſomething in them contrary to the eſtabliſhed rules of heraldry. As, when metal is put on metal, or colour on colour, &c.

The laws, and other affairs of arms, with the cognizance of offences committed therein, belong, among us, to the earl marſhal and college of arms.

Arms, in *Falconry*, denote the legs of a hawk, from the thigh to the foot. See Falconry.

Armſtrong.

ARMSTRONG, Dr John, an eminent phyſician, poet, and miſcellaneous writer, was born in Caſtleton pariſh, Roxburghſhire, where his father and brother were miniſters; completed his education in the univerſity of Edinburgh, where he took his degree in phyſic, Feb. 4. 1732, with much reputation; and publiſhed his theſis, as the forms of that univerſity require; the ſubject was *De tabe purulenta*. In 1735 he publiſhed a little humorous fugitive pamphlet in 8vo, entitled, "An Eſſay for abridging the Study of Phyſic; to which is added a Dialogue betwixt Hygeia, Mercury, and Pluto, relating to the practice of phyſic, as it is managed by a certain illuſtrious Society. As alſo an Epiſtle from Uſbek the Perſian to Joſhua Ward, Eſq." This piece contains much fun and drollery; in the dialogue, he has caught the very ſpirit of Lucian. In 1737 he publiſhed a Synopſis of the Hiſtory and Cure of the Venereal Diſeaſe, 8vo. This was ſoon followed by the *Economy of Love*; a poem which has much merit, but, it muſt be confeſſed, is too ſtrongly tinctured with the licentiouſneſs of Ovid. It is ſaid, however, that his maturer judgment expunged many of the luxuriances of youthful fancy, in an edition "reviſed and corrected by the author" in 1768. It appears by one of the caſes on literary property, that Mr Millar paid 50 guineas for the copy-right of this poem, which was intended as a burleſque on ſome didactic writers. It has been obſerved of Dr Armſtrong, that his works have great inequalities, ſome of them being poſſeſſed of every requiſite to be ſought after in the moſt perfect compoſition, while others can hardly be conſidered as ſuperior to the productions of mediocrity. *The Art of preſerving Health*, his beſt performance, which was publiſhed in 1744, will tranſmit his name to poſterity as one of the firſt Engliſh writers, has been honoured with the following teſtimony of a reſpectable critic. On this work we ſhall alſo tranſcribe a beautiful eulogium from an eminent phyſician*: "Of all the poetical performances on this ſubject that have come to my hands, Dr Armſtrong's Art of preſerving Health is by far the beſt. To quote every charming deſcription and beautiful paſſage of this poem, one muſt tranſcribe the whole. We cannot, however, expect new rules, where the principal deſign was to raiſe and warm the heart into a compliance with the ſolid precepts of the ancients, which he has enforced with great ſtrength and elegance. And, upon the whole, he has convinced us, by his own example, that we ought not to blame antiquity for acknowledging

One power of phyſic, melody, and ſong."

* *Dr Mackenzie's Hiſtory of Health.*

In 1746 Dr Armſtrong was appointed one of the phyſicians to the Hoſpital for Lame and Sick Soldiers behind Buckingham houſe. In 1751 he publiſhed his poem on Benevolence, in folio; and in 1753, "Taſte, an Epiſtle to a young Critic." In 1758 appeared, "Sketches or Eſſays on various ſubjects, by Launcelot Temple, Eſq. in two parts." In this production, which poſſeſſes much humour and knowledge of the world, and which had a remarkably rapid ſale, he is ſuppoſed to have been aſſiſted by Mr Wilkes. In 1760 he had the honour of being appointed phyſician to the army in Germany, where in 1761 he wrote a poem called "Day, an Epiſtle to John Wilkes of Aylesbury, Eſq." In this poem, which is not collected in his works, he wantonly hazarded a reflection on Church-ill, which drew on him the ſerpent-toothed vengeance of that ſevereſt of ſatiriſts, whoſe embalming or corroſive pen could deify or lampoon any man, according as he acquieſced with, or diſſented from his political principles. In 1770 Dr Armſtrong publiſhed a collection of "Miſcellanies, in 2 vols.; containing, 1. The Art of preſerving Health. 2. Of Benevolence, an Epiſtle to Eumenes. 3. Taſte, an Epiſtle to a young Critic, 1753. 4. Imitations of Shakeſpeare and Spenſer. 5. The Univerſal Almanack, by Noureddin Ali. 6. The Forced Marriage, a tragedy. 7. Sketches." In 1771 he publiſhed "A ſhort Ramble through ſome parts of France and Italy, by Launcelot Temple;" and in 1773, in his own name, a quarto pamphlet, under the title of "Medical Eſſays;" towards the concluſion of which, he accounts for his not having ſuch extenſive practice as ſome of his brethren, from his not being qualified to employ the uſual means, from a tickliſh ſtate of ſpirits, and a diſtempered exceſs of ſenſibility. He complains much of the behaviour of ſome of his brethren, of the herd of critics, and particularly of the reviewers. He died in Sept. 1779; and to the no ſmall ſurpriſe of his friends, left behind him more than 300l. ſaved out of a very moderate income, ariſing principally from his half-pay.

Armuyden, Army.

ARMUYDEN, a ſea port town of the United Provinces, in the iſland of Walcherin, formerly very flouriſhing; but now inconſiderable, the ſea having ſtopped up the harbour. The ſalt works are its chief reſource. E. Long. 3. 40. N. Lat. 51. 30.

ARMY, a large number of ſoldiers, conſiſting of horſe and foot, completely armed, and provided with artillery, ammunition, proviſions, &c. under the command of one general, having lieutenant-generals, major-generals, brigadiers, and other officers under him. An army is compoſed of ſquadrons and battalions; and is uſually divided into three corps, and formed in three lines: the firſt line is called the *van-guard*, the ſecond the *main-body*, and the third the *rear-guard* or *body of reſerve*. The middle of each line is poſſeſſed by the foot; the cavalry form the right and left wing of each line; and ſometimes they place ſquadrons of horſe in the intervals between the battalions. When the army is drawn up in order of battle, the horſe are placed at five feet diſtance from each other, and the foot at three. In each line the battalions are diſtant from each other 180 feet, which is nearly equal to the extent of their front; and the ſame holds of the ſquadrons, which are about 300 feet diſtant, the extent of their own front. Theſe intervals are left for the ſquadrons and battalions of the ſecond line to range themſelves againſt the intervals of the firſt, that both may more readily march through theſe ſpaces to the enemy: the firſt line is uſually 300 feet diſtant from the ſecond, and the ſecond from the third, that there may be ſufficient room to rally when the ſquadrons and battalions are broken. See the article War.

This is to be underſtood of a land army only. A naval or ſea army is a number of ſhips of war, equipped and manned with ſailors and marines, under the command of an admiral, with other inferior officers under him. See Naval Tactics.

It has been obſerved, that in Europe a prince with a million of ſubjects cannot keep an army of above 10,000 men, without ruining himſelf. It was otherwiſe

Army. wife in the ancient republics: the proportion of ſoldiers to the reſt of the people, which is now as about one to 100, might then be as about one to eight. The reaſon ſeems owing to that equal partition of lands which the ancient founders of commonwealths made among their ſubjects; ſo that every man had a conſiderable property to defend, and means to defend it with: whereas, among us, the lands and riches of a nation being ſhared among a few, the reſt have no way of ſubſiſting but by trades, arts, and the like; and have neither any free property to defend, nor means to enable them to go to war in defence of it, without ſtarving their families. A large part of our people are either artiſans or ſervants, and ſo only miniſter to the luxury and effeminacy of the great. While the equality of lands ſubſiſted, Rome, though only a little ſtate, being refuſed the ſuccours which the Latins were obliged to furniſh after the taking of the city in the conſulate of Camillus, preſently raiſed ten legions within its own walls; which was more, Livy aſſures us, than they were able to do in his time, though maſters of the greateſt part of the world. A full proof, adds the hiſtorian, than we are not grown ſtronger; and that what ſwells our city is only luxury, and the means and effects of it.

Our armies anciently were a ſort of militia, compoſed chiefly of the vaſſals and tenants of the lords. When each company had ſerved the number of days or months enjoined by their tenure, or the cuſtoms of the fees they held, they returned home. The armies of the empire conſiſt of divers bodies of troops furniſhed by the ſeveral circles. The groſs of the French armies under the Merovingian race, conſiſted of infantry. Under Pepin and Charlemagne, the armies conſiſted almoſt equally of cavalry and foot: but ſince the declenſion of the Carlovingian line, the fees being become hereditary, the national armies, ſays Le Gendre, are chiefly cavalry.

A well regulated ſtanding army is greatly ſuperior to a militia; although a militia, it is to be obſerved, after ſerving two or three campaigns, may become equal to a ſtanding army, and in every reſpect a match for veteran troops. See MILITIA.

One of the firſt ſtanding armies of which we have a diſtinct account, in any well authenticated hiſtory, is that of Philip of Macedon. His frequent wars with the Thracians, Illyrians, Theſſalians, and ſome of the Greek cities in the neighbourhood of Macedon, gradually formed his troops, which in the beginning were probably militia, to the exact diſcipline of a ſtanding army. When he was at peace, which was very ſeldom, and never for any long time together, he was careful not to diſband that army. It vanquiſhed and ſubdued, after a long and violent ſtruggle, indeed, the gallant and well exerciſed militias of the principal republics of ancient Greece; and afterwards, with very little ſtruggle, the effeminate and ill exerciſed militia of the great Perſian empire. The fall of the Greek republics and of the Perſian empire, was the effect of the irreſiſtible ſuperiority which a ſtanding army has over every ſort of militia. It is the firſt great revolution in the affairs of mankind of which hiſtory has preſerved any diſtinct or circumſtantial account.

The fall of Carthage, and the conſequent elevation of Rome, is the ſecond. All the varieties in the fortune of thoſe two famous republics may very well be accounted for from the ſame cauſe. Army.

From the end of the firſt to the beginning of the ſecond Carthaginian war, the armies of Carthage were continually in the field, and employed under three great generals, who ſucceeded one another in the command; Hamilcar, his ſon-in-law Aſdrubal, and his ſon Hannibal; firſt in chaſtiſing their own rebellious ſlaves, afterwards in ſubduing the revolted nations of Africa; and, laſtly, in conquering the great kingdom of Spain. The army which Hannibal led from Spain into Italy muſt neceſſarily, in thoſe different wars, have been gradually formed to the exact diſcipline of a ſtanding army. The Romans, in the mean time, though they had not been altogether at peace, yet they had not during this period, been engaged in any war of very great conſequence; and their military diſcipline, it is generally ſaid, was a good deal relaxed. The Roman armies which Hannibal encountered at Trebia, Thraſymenus, and Cannæ, were militia oppoſed to a ſtanding army. This circumſtance, it is probable, contributed more than any other to determine the fate of thoſe battles.

The ſtanding army which Hannibal left behind him in Spain, had the like ſuperiority over the militia which the Romans ſent to oppoſe it, and in a few years, under the command of his brother the younger Aſdrubal, expelled them almoſt entirely from that country.

Hannibal was ill ſupplied from home. The Roman militia, being continually in the field, became in the progreſs of the war a well diſciplined and well exerciſed ſtanding army; and the ſuperiority of Hannibal grew every day leſs and leſs. Aſdrubal judged it neceſſary to lead the whole, or almoſt the whole, of the ſtanding army which he commanded in Spain, to the aſſiſtance of his brother in Italy. In this march he is ſaid to have been miſled by his guides; and in a country which he did not know, was ſurpriſed and attacked by another ſtanding army, in every reſpect equal or ſuperior to his own, and was entirely defeated.

When Aſdrubal had left Spain, the great Scipio found nothing to oppoſe him but a militia inferior to his own. He conquered and ſubdued that militia; and in the courſe of the war, his own militia neceſſarily became a well diſciplined and well exerciſed ſtanding army. That ſtanding army was afterwards carried to Africa, where it found nothing but a militia to oppoſe it. In order to defend Carthage, it became neceſſary to recal the ſtanding army of Hannibal. The diſheartened and frequently defeated African militia joined it, and at the battle of Zama compoſed the greater part of the troops of Hannibal. The event of that day determined the fate of the two rival republics.

From the end of the ſecond Carthaginian war till the fall of the Roman republic, the armies of Rome were in every reſpect ſtanding armies. The ſtanding army of Macedon made ſome reſiſtance to their arms. In the height of their grandeur it coſt them two great wars and three great battles, to ſubdue that little kingdom; of which the conqueſt would probably have been ſtill more difficult, had it not been for the cowardice of its laſt king. The militias of all the civilized nations of the ancient world, of Greece, of Syria, and

Army. of Egypt, made but a feeble reſiſtance to the ſtanding armies of Rome. The militias of ſome barbarous nations defended themſelves much better. The Scythian or Tartar militia, which Mithridates drew from the countries north of the Euxine and Caſpian ſeas, were the moſt formidable enemies whom the Romans had to encounter after the ſecond Carthaginian war. The Parthian and German militias too were always reſpectable, and upon ſeveral occaſions gained very conſiderable advantages over the Roman armies. In general, however, and when the Roman armies were well commanded, they appear to have been very much ſuperior.

Many different cauſes contributed to relax the diſcipline of the Roman armies. Its extreme ſeverity was, perhaps, one of thoſe cauſes. In the days of their grandeur, when no enemy appeared capable of oppoſing them, their heavy armour was laid aſide as unneceſſarily burdenſome, their laborious exerciſes were neglected as unneceſſarily toilſome. Under the Roman emperors, beſides, the ſtanding armies of Rome, thoſe particularly which guarded the German and Pannonian frontiers, became dangerous to their maſters, againſt whom they uſed frequently to ſet up their own generals. In order to render them leſs formidable, according to ſome authors Diocleſian, according to others Conſtantine, firſt withdrew them from the frontiers, where they had always before been encamped in great bodies, generally of two or three legions each, and diſperſed them in ſmall bodies through the different provincial towns, from whence they were ſcarce ever removed, but when it became neceſſary to repel an invaſion. Small bodies of ſoldiers quartered in trading and manufacturing towns, and ſeldom removed from theſe quarters, became themſelves tradeſmen, artificers, and manufacturers. The civil came to predominate over the military character; and the ſtanding armies of Rome gradually degenerated into a corrupt, neglected, and undiſciplined militia, incapable of reſiſting the attack of the German and Scythian militias, which ſoon afterwards invaded the weſtern empire. It was only by hiring the militia of ſome of thoſe nations to oppoſe to that of others, that the emperors were for ſome time able to defend themſelves. The fall of the weſtern empire is the third great revolution in the affairs of mankind, of which ancient hiſtory has preſerved any diſtinct or circumſtantial account. It was brought about by the irreſiſtible ſuperiority which the militia of a barbarous has over that of a civilized nation; which the militia of a nation of ſhepherds has over that of a nation of huſbandmen, artificers, and manufacturers. The victories which have been gained by militias have generally been not over ſtanding armies, but over other militias in exerciſe and diſcipline inferior to themſelves. Such were the victories which the Greek militia gained over that of the Perſian empire; and ſuch too were thoſe which in later times the Swiſs militia gained over that of the Auſtrians and Burgundians.

The military force of the German and Scythian nations, who eſtabliſhed themſelves upon the ruins of the weſtern empire, continued for ſome time to be of the ſame kind in their new ſettlements as it had been in their original country. It was a militia of ſhepherds and huſbandmen, which in time of war took the field under the command of the ſame chieftans whom it was accuſtomed to obey in peace. It was therefore tolerably well exerciſed and tolerably well diſciplined. As arts and induſtry advanced, however, the authority of the chieftans gradually decayed, and the great body of the people had leſs time to ſpare for military exerciſes. Both the diſcipline and the exerciſe of the feudal militia, therefore, went gradually to ruin, and ſtanding armies were gradually introduced to ſupply the place of it. When the expedient of a ſtanding army, beſides, had once been adopted by one civilized nation, it became neceſſary that all its neighbours ſhould follow the example. They ſoon found that their ſafety depended upon their doing ſo, and that their own militia was altogether incapable of reſiſting the attack of ſuch an army. Army.

The ſoldiers of a ſtanding army, though they may never have ſeen an enemy, yet have frequently appeared to poſſeſs all the courage of veteran troops, and the very moment that they took the field, to have been fit to face the hardieſt and moſt experienced veterans. In a long peace the generals perhaps may ſometimes forget their ſkill; but where a well regulated ſtanding army has been kept up, the ſoldiers ſeem never to forget their valour.

When a civilized nation depends for its defence upon a militia, it is at all times expoſed to be conquered by any barbarous nation which happens to be in its neighbourhood. The frequent conqueſts of all the civilized countries in Aſia by the Tartars, ſufficiently demonſtrates the natural ſuperiority which the militia of a barbarous has over that of a civilized nation. A well regulated ſtanding army is ſuperior to every militia. Such an army, as it can beſt be maintained by an opulent and civilized nation, ſo it can alone defend ſuch a nation againſt the invaſion of a poor and barbarous neighbour. It is only by means of a ſtanding army, therefore, that the civilization of any country can be perpetuated, or even preſerved for any conſiderable time.

As it is only by means of a well regulated ſtanding army that a civilized country can be defended, ſo it is only by means of it that a barbarous country can be ſuddenly and tolerably civilized. A ſtanding army eſtabliſhes, with an irreſiſtible force, the law of the ſovereign through the remoteſt provinces of the empire, and maintains ſome degree of regular government in countries which could not otherwiſe admit of any. Whoever examines with attention the improvements which Peter the Great introduced into the Ruſſian empire, will find that they almoſt all reſolve themſelves into the eſtabliſhment of a well regulated ſtanding army. It is the inſtrument which executes and maintains all his other regulations. That degree of order and internal peace which that empire has ever ſince enjoyed, is altogether owing to the influence of that army.

Men of republican principles have been jealous of a ſtanding army as dangerous to liberty. It certainly is ſo, wherever the intereſt of the general and that of the principal officers are not neceſſarily connected with the ſupport of the conſtitution of the ſtate. The ſtanding army of Cæſar deſtroyed the Roman republic; the ſtanding army of Cromwell turned the long parliament out of doors. But where the ſovereign is himſelf the general,

Arnall || Arnaud.

general, and the principal nobility and gentry of the country the chief officers of the army; where the military force is placed under the command of thoſe who have the greateſt intereſt in the ſupport of the civil authority, becauſe they have themſelves the greateſt ſhare of that authority; a ſtanding army can never be dangerous to liberty: on the contrary it may, in ſome caſes, be favourable to liberty. The ſecurity which it gives to the ſovereign renders unneceſſary that troubleſome jealouſy which in ſome modern republics ſeems to watch over the minuteſt actions, and to be at all times ready to diſturb the peace of every citizen. Where the ſecurity of the magiſtrate, though ſupported by the principal people of the country, is endangered by every popular diſcontent; where a ſmall tumult is capable of bringing about in a few hours a great revolution; the whole authority of government muſt be employed to ſuppreſs and puniſh every murmur and complaint againſt it. To the ſovereign, on the contrary, who feels himſelf ſupported not only by the natural ariſtocracy of the country, but by a well regulated ſtanding army, the rudeſt, the moſt groundleſs, and the moſt licentious remonſtrances, can give little diſturbance. He can ſafely pardon or neglect them, and his conſciouſneſs of his own ſuperiority naturally diſpoſes him to do ſo. That degree of fidelity which approaches to licentiouſneſs can be tolerated only in countries where the ſovereign is ſecured by a well regulated ſtanding army. It is in ſuch countries only that the public ſafety does not require that the ſovereign ſhould be truſted with any diſcretionary power for ſuppreſſing even the impertinent wantonneſs of this licentious liberty.

ARNALL, William, a noted political writer in defence of Sir Robert Walpole, was originally an attorney's clerk; but being recommended to Walpole, he employed him for a courſe of years in writing the *Free Briton* and other papers in defence of his adminiſtration. By the report of the ſecret committee, he appears to have received, in the ſpace of four years, no leſs than 10,997l. 6s. 8d. out of the treaſury for his writings! but ſpending his money as faſt as it came, and his ſupplies ſtopping on Sir Robert's reſignation, he died broken-hearted and in debt, in the 26th year of his age. His invention was ſo quick, that his honourable employer uſed to ſay, no man in England could write a pamphlet in ſo little time as Arnall.

ARNAUD de Meyrveilh, or Mereuil, a poet of Provence, who lived at the beginning of the 13th century. He wrote a book entitled *Las recaſtenas de ſa conteſſe*, and a collection of poems and ſonnets. He died in the year 1220. Petrarch mentions him in his Triumph of Love.

Arnaud de Villa Nova, a famous phyſician, who lived about the end of the 13th and beginning of the 14th century. He ſtudied at Paris and Montpelier, and travelled through Italy and Spain. He was well acquainted with languages, and particularly with the Greek, Hebrew, and Arabic. He was at great pains to gratify his ardent deſire after knowledge; but this paſſion carried him rather too far in his reſearches: he endeavoured to diſcover future events by aſtrology imagining this ſcience to be infallible; and upon this foundation he publiſhed a prediction, that the world would come to an end in the middle of the 14th century. He practiſed phyſic at Paris for ſome time; but having advanced ſome new doctrines, he drew upon himſelf the reſentment of the univerſity; and his friends, fearing he might be arreſted, perſuaded him to retire from that city. Upon his leaving France, he retired to Sicily, where he was received by King Frederick of Arragon with the greateſt marks of kindneſs and eſteem. Some time afterwards, this prince ſent him to France, to attend Pope Clement in an illneſs; and he was ſhipwrecked on the coaſt of Genoa, about the year 1313. The works of Arnaud, with his life prefixed, were printed in one volume in folio, at Lyons, in 1520, and at Baſil in 1585, with the notes of Nicholas Tolerus.

Arnaud d'Andilly, *Robert*, the ſon of a celebrated advocate of the parliament of Paris, was born in 1588; and being introduced young at court, was employed in many conſiderable offices, all which he diſcharged with great integrity and reputation. In 1644 he quitted buſineſs, and retired into the convent of Port Royal des Champs, where he paſſed the remainder of his days in a continued application to works of piety and devotion; and enriched the French language with many excellent tranſlations of different writers, as well as with religious compoſitions of his own. He died in 1674, and his works are printed in 8 vols. folio.

Arnaud, *Antony*, brother of the preceding, and a doctor of the Sorbonne, was born in 1612. He publiſhed, in 1643, *A Treatiſe on frequent Communion*, which highly diſpleaſed the Jeſuits; and the diſputes upon grace, which broke out about this time in the univerſity of Paris, and in which he took a zealous part with the Janſeniſts, helped to increaſe the animoſity between him and the Jeſuits. But nothing raiſed ſo great a clamour againſt him as the two letters he wrote on *Abſolution*; in the ſecond of which the faculty of divinity found two propoſitions which they condemned, and M. Arnaud was expelled the ſociety. Upon this he retired; and during a retreat which laſted near 25 years, he compoſed that great variety of works which are extant of his, on grammar, geometry, logic, metaphyſics, and theology. In 1679, he withdrew from France, lived in obſcurity in the Netherlands, and died in 1694. His heart, at his own requeſt, was ſent to be depoſited in the Port Royal. Arnaud had a remarkable ſtrength of genius, memory, and command of his pen; nor did theſe decay even to the laſt year of his life. Mr Bayle ſays, he had been told by perſons who had been admitted into his familiar converſation, that he was a man very ſimple in his manners; and that unleſs any one propoſed ſome queſtion to him, or deſired ſome information, he ſaid nothing that was beyond common converſation, or that might make one take him for a man of great abilities; but when he ſet himſelf to give an anſwer to ſuch as propoſed a point of learning, he ſeemed as it were transformed into another man: he would then deliver a multitude of fine things with great perſpicuity and learning, and had a particular talent at making himſelf intelligible to perſons not of the greateſt penetration.

ARNAY-LE-DUC, a town of France, in the duchy of Burgundy, which carries on a pretty good trade. It is ſeated on the Auxois, in a valley near the river Aroux. E. Long. 4. 26. N. Lat. 47. 7.

Arndt
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Arnifæus.

ARNDT, JOHN, a famous Proteſtant divine of Germany, born at Ballenſtad, in the duchy of Anhalt, in the year 1555. At firſt he applied himſelf to the ſtudy of phyſic: but falling into a dangerous ſickneſs, he made a vow to change his profeſſion for that of divinity, if he ſhould be reſtored to health; which he accordingly did upon his recovery. He was a miniſter firſt at Quedlinburg and then at Brunſwick. He met with great oppoſition in this laſt city: his ſucceſs as a preacher raiſed the enmity of his brethren, who became his bitter enemies. In order to ruin his character, they aſcribed a variety of errors to him; and perſecuted him to ſuch a degree, that he was obliged to leave Brunſwick, and retire to Iſleb, where he was miniſter for three years. In 1611, George duke of Lunenburg, who had a high opinion of his integrity and ſanctity, gave him the church of Zell, and appointed him ſuperintendant of all the churches in the duchy of Lunenburg; which office he diſcharged for 11 years, and died in 1621. It is reported that he foretold his death, having ſaid to his wife, upon his return home after his laſt ſermon, that now he had preached his funeral ſermon. He wrote in High Dutch *A Treatiſe on True Chriſtianity*, which has been tranſlated into ſeveral languages.

ARNE, DR THOMAS AUGUSTINE, diſtinguiſhed by his ſkill in muſic, was the ſon of Mr Arne an upholſterer in Covent Garden, whom Addiſon is ſuppoſed to have characterized in N° 155 and N° 160 of The Tatler; and brother of Mrs Cibber the player. He was early devoted to muſic, and ſoon became eminent in his profeſſion. July 6. 1759, he had the degree of doctor of muſic conferred on him at Oxford. His compoſitions are univerſally applauded, and he was alſo particularly ſkilful in inſtructing vocal performers. He died March 5. 1778, having written the following pieces: *Artaxerxes*, 1762; *The Guardian outwitted*, 1764; *The Roſe*, 1778; all of them operas.

ARNHEIM, a town of the Low Countries, in the province of Guelderland, capital of Veluive. It is adorned with ſeveral fine churches, particularly that of St Walburg and of St Euſebius; which laſt has a very high tower. The town has five gates, and ſeveral fine ramparts, part of which are waſhed by the Rhine, and the other parts have wide and deep ditches before them. There is a canal made between this place and Nimeguen, at the expence of both towns, on which boats paſs backwards and forwards to carry on a trade between them. The air is very healthful; on which account it is inhabited by perſons of diſtinction. E. Long. 5. 55. N. Lat. 52. 0.

ARNICA, LEOPARD'S BANE. See BOTANY *Index*.

ARNISÆUS, HENNINGUS, a philoſopher and phyſician of great reputation, about the beginning of the 17th century. He was born at Halberſtadt in Germany, and was profeſſor of phyſic in the univerſity of Helmſtadt. His political works are much eſteemed. The moſt remarkable of them is his book *De authoritate principum in populum ſumper inviolabili*, printed at Francfort in 1612. In this he maintains that the authority of princes ought not to be violated. He wrote alſo upon the ſame doctrine his three books, *De jure Majeſtatis*, printed at the ſame place in 1610; and his *Reflectiones Politicæ*, printed at Francfort in 1615.

Arnobius,
Arnold.

Having received an invitation to go to Denmark, he went thither, and was made counſellor and phyſician to the king. He travelled into France and England, and died in November 1635. Beſides the pieces already mentioned, he wrote ſeveral philoſophical, medicinal, and poetical treatiſes.

ARNOBIUS, profeſſor of rhetoric at Sicca, in Numidia, towards the end of the third century. It was owing to certain dreams which he had that he became deſirous of embracing Chriſtianity. For this purpoſe he applied to the biſhops to be admitted into the church. But they, remembering the violence with which he had always oppoſed the true faith, had ſome diſtruſt of him; and before they would admit him, inſiſted on ſome proofs of his ſincerity. In compliance with this demand, he wrote againſt the Gentiles: wherein he has refuted the abſurdities of their religion, and ridiculed their falſe gods. In this treatiſe he has employed all the flowers of rhetoric, and diſplayed great learning: but from an impatience to be admitted into the body of the faithful, he is thought to have been in too great a hurry in compoſing his work, and thence it is that there does not appear in this piece ſuch an exact order and diſpoſition as could be wiſhed; and not having a perfect and exact knowledge of the Chriſtian faith, he publiſhed ſome very dangerous errors. Mr Bayle remarks, that his notions about the origin of the ſoul, and the cauſe of natural evil, and ſeveral other important points, are highly pernicious. St Jerome, in his epiſtle to Paulinus, is of opinion that his ſtyle is unequal and too diffuſe, and that his book is written without any method; but Dr Cave thinks this judgement too ſevere, and that Arnobius wants neither elegance nor order in his compoſition. Voſſius ſtyles him *the Varro of the eccleſiaſtical writers*. Du Pin obſerves that his work is written in a manner worthy of a profeſſor of rhetoric: the turn of his ſentiments is very oratorical; but his ſtyle is a little African, his expreſſions being harſh and inelegant. We have ſeveral editions of this work of Arnobius againſt the Gentiles, one publiſhed at Rome in 1542, at Baſil in 1546 and 1560, at Paris in 1570, at Antwerp in 1582, and one at Hamburgh in 1610, with notes by Gebhard Elmenhoſtius, beſides many others. He wrote alſo a piece entitled *De Rhetoricæ Inſtitutione;* but this is not extant.

ARNOLD, of Breſcia, in Italy, diſtinguiſhed himſelf by being the founder of a ſect which oppoſed the wealth and power of the Roman clergy. He went into France, where he ſtudied under the celebrated Peter Abelard. Upon his return to Italy, he put on the habit of a monk, and opened his invectives in the ſtreets of Breſcia. The people crowded round him. He told him he was ſent to reform abuſes, to pull down the proud and to exalt the humble. He then pointed his declamation againſt the biſhops, againſt the clergy, againſt the monks, and finally againſt the Roman pontiff himſelf: to the laity only he was indulgent. Churchmen, ſaid he, who hold benefices, biſhops who have domains, and monks that have poſſeſſions, will all be damned. His hearers ſhouted approbation. Theſe things, continued he, belonged to the prince; he may give them to whom he pleaſes, but he muſt give them to the laity. It is on their tithes, and the voluntary

contributions

Arnold. contributions of the people, that thoſe ſons of God muſt live: they muſt be frugal, continent, and mortified.

The church of Breſcia was ſoon thrown into the greateſt confuſion, and the people, already prejudiced againſt their miniſters, threatened to overturn their altars. The ſacred writings he urged in ſupport of his aſſertion, and from them he denounced the vengeance of heaven againſt the violators of the law. Indeed, nothing could be more glaringly offenſive than the oſtentatious parade of the biſhops and great abbots, and the ſoft and licentious lives of the monks and clergy.

In 1139 was celebrated a grand council at Rome. Arnold was cited to appear before it. His accuſers were the biſhop of Breſcia, and many others, whom he had ridiculed and inſulted. Nor from his judges could he look for much indulgence. He was found guilty, and ſentenced to perpetual ſilence. Upon this he left Italy, croſſed the Alps, and found a refuge in Zurich.

Though Arnold had quitted Italy, yet had his opinions taken deep root, and Rome itſelf was infected by them. Irritated by the conduct of their maſter Innocent II. the Roman people aſſembled in the capitol. It was propoſed that the power of the pontiff, which they called exorbitant, ſhould be reſtrained: this was carried: then ſuddenly, inſpired as it were by the genius of the place, they moved that the ſenate, which for years had been aboliſhed, ſhould be reſtored. The propoſition was received with the loudeſt acclamations. Innocent in vain oppoſed the bold deſign; there was a magic in it which ſpread irreſiſtibly, and for a moment ſeemed to rouſe the fallen ſpirit of the nation. The pope viewed with horror the reverſe of fortune which threatened the tiara; to be ſhorn of his mighty power, and to become the mere ſhepherd of the chriſtian people, was a thought too afflicting: he fell ſick and died.

Under his two immediate ſucceſſors Celeſtin and Lucius, whoſe reigns were but of a few months, the Romans purſued their darling object. They waited on the latter, and, in an imperious tone, demanded the reſtitution of all the honours and civil rights which had been uſurped from the people. The prince of the ſenate, ſaid they, whom we have choſen, will beſt adminiſter the important truſt; the tithes and offerings of the faithful will ſufficiently anſwer all the exigencies of your holineſs; It was thus that our ancient biſhops lived. Lucius ſurvived this event but a few days. His ſucceſſor was Eugenius III. the friend and diſciple of the renowned Bernard. The night before his conſecration the ſenators aſſembled, and it was agreed, that either he ſhould ſolemnly confirm all their proceedings, or they would annul his election. This reſolution was notified to him. He called together his friends; and it was their advice, that he ſhould neither accede to the extravagant demands, nor expoſe himſelf, by a refuſal, to the fury of the populace. He therefore ſilently withdrew from Rome, and retired to a neighbouring fortreſs. Here the ceremony of his conſecration was performed.

Arnold, who in baniſhment had contemplated the effect of his admonitions on the minds of the Romans, and the ſucceſs which ſeemed to follow their exertions, was now informed that the pope had retired, and the gates of the capital were open to receive him: it was likewiſe ſuggeſted to him, that his preſence was more than ever neceſſary, to give energy to their reſolves, form to their plans, and ſtability to their undertakings. Arnold took fire at the news; an unuſual ſwell of enthuſiaſm filled his breaſt; and he fancied that, like Junius Brutus, he was called at once to give liberty to Rome. At his appearance a new ſtream of vigour animated the citizens; they called him their friend and deliverer. The Breſcian walked amongſt them; his deportment was humble, his countenance emaciated, his addreſs affable, and he ſpoke to them of moderation, ſubmiſſion, of obedience. With the nobles and new ſenators he held another language; though to them alſo he was mild and diffident, ſpeaking much of virtue and of reſpect for religion and the laws. But no ſooner was he ſenſible of his own real influence, and ſaw the lengths to which the revolters had already carried their deſigns, than he threw aſide the maſk, and appeared in his own character, daring, impetuous, ſelf-ſufficient, vain. He harangued the people; he talked of their forefathers the ancient Romans, who, by the wiſdom of their ſenate and the valour of their armies, had conquered nations and ſubdued the earth. He dwelt on the names and the achievements of the Bruti, the Gracchi, and the Scipios; and of theſe men, ſaid he, are you not the children? He adviſed, that the capitol be inſtantly repaired; that the equeſtrian order be reſtored; that the people have their tribunes; that dignity attend the ſenate; that the laws, which had been ſilent and neglected, be revived in all their vigour. He ſpoke of the pope as of a depoſed and baniſhed tyrant: "But ſhould you again be diſpoſed (continued he) to admit him within theſe walls; firſt fix your own rights and determine his. He is but your biſhop: let him therefore have his ſpiritual juriſdiction. The government of Rome, its civil eſtabliſhments, and its territories, belong to you. Theſe you will keep if you have the ſpirit of men and the hearts of Romans." Fired by this harangue, the people, headed by the moſt diſaffected of the nobles, publicly attacked the few cardinals and churchmen who remained in the city; they ſet fire to the palaces; and they compelled the citizens to ſwear obedience to the new government. Moderate men, who ſaw the folly of the attempt, were ſhocked at theſe exceſſes of popular phrenzy; but it was in vain to oppoſe the torrent: they ſubmitted, looking forward with ſome curioſity to the termination of an event which had begun in extravagance, and muſt end in diſappointment. Arnold.

Eugenius till now had viewed, with ſome concern, the wild derangement of his people: but when it ſeemed that their eyes opened to their own exceſſes, he could be inactive no longer. He excommunicated the ringleaders of the faction; and at the head of his troops, who were chiefly compoſed of Tiburtini, a people always hoſtile to the Romans, he marched againſt the enemy. His friends within the walls, who were numerous, co-operated with his deſigns, and in a few days overtures for peace were made to the pontiff. He acceded to them, but on condition that they ſhould annul the arrangements they had made, and if they would have ſenators, that they ſhould acknowledge

all

Arnold || Arnoldus.

all their power was from him. The people were ſatisfied, and they threw open the gates, through which Eugenius entered, amid the acclamations of a fawning and inconſtant multitude. Before this event Arnold had retired; but he left behind him many friends ſtrongly attached to his perſon and principles. Of himſelf we hear little more till the reign of Adrian our countryman; when, on account of freſh tumults, he and his adherents were excommunicated, and Rome was threatened with an interdict unleſs they expelled the whole party from their walls. This they did. The Arnoldiſts retired with their champion into Tuſcany, where he was received as a prophet and honoured as a ſaint. His enemies, however, prevailed; he was made priſoner, and conducted under a ſtrong eſcort to Rome. In vain was great intereſt made to ſave his life; he was condemned and executed, and his aſhes thrown into the Tiber, leſt the people ſhould collect his remains and venerate them as the relicks of a ſainted martyr.

* *Hiſt. of the lives of Abelard and Heloiſa.*

"Such was Arnold of Breſcia; a man (ſays Mr Berington *), whoſe character, whoſe principles, and whoſe views, we perhaps ſhould be diſpoſed to admire, had his life been recorded by unprejudiced hiſtorians, and not brought down to us drawn in the blackeſt colours which party, bigotted zeal, and enthuſiaſm, could lay on. He was raſh, misjudging, and intemperate, or never would he have engaged in ſo unequal a conteſt. The view of ſuch a phenomenon in the 12th century excites a pleaſing admiration. To attack the Roman pontiff and his clergy in the very centre of their power, required a more than common ſhare of fortitude: to adopt a ſettled ſcheme of reſtoring to its priſtine glory the republic of Rome, demanded a ſtretch of thought comprehenſive and enterpriſing; and to forego the eaſe and indulgence of a diſſipated age, for the reformation of manners and the ſuppreſſion of what he thought uſurped dominion, argued a character of mind diſintereſted, generous, and benevolent. But Arnold, like other reformers, went too far; and paſſion ſoon vitiated undertakings which were begun perhaps with motives the moſt laudable.—The readineſs with which the Roman people embraced this plan of lowering the juriſdiction of the pontiff, and reſtraining it within thoſe bounds which the true ſpirit of Chriſtianity had fixed, at once ſhows that they could reaſon juſtly, and that they conſidered the unbounded ſway of the triple crown, to which reluctantly they ſubmitted, as an aſſumed prerogative, to which violence or miſconſtruction, and not Chriſtian right, had given efficacy."

ARNOLDISTS, in church hiſtory, a ſect ſo called from their leader Arnold of Breſcia. See the preceding article.

ARNOLDUS, Gothofredus, paſtor and inſpector of the churches of Perleberg, and hiſtoriographer to the king of Pruſſia, was born at Annaburg in the mountains of Miſnia in 1666. He was a zealous defender of the Pietiſts, a ſect among the German Proteſtants, and compoſed a great number of religious works; particularly an *Eccleſiaſtical Hiſtory*, which expoſed him to the reſentment of the divines; and another giving an account of the doctrines and manners from the firſt ages, in which he frequently animadverts upon Cave's Primitive Chriſtianity. He died in 1714. Various are the opinions concerning Arnoldus in Germany; ſome of his own countrymen and profeſſion extolling him to the ſkies as a ſaint of the laſt century, and ſetting an ineſtimable value upon his works; while others pronounce damnation upon him as an arch-heretic, and condemn his writings as heterodox.

Arnon || Arnway.

ARNON, in *Ancient Geography*, a brook running between the borders of the Moabites and Ammonites on the other ſide Jordan (Moſes, Joſhua): Joſephus calls it a river riſing on the borders of Arabia, and at length falling into the Dead ſea. It is alſo called the river of Gad, as appears 2 Sam. xxv. 5. compared with 2 Kings x. 33.

ARNOT. See Bunium, Botany *Index*.

ARNOTTO, the ſame with Anotta. See Anotta and Bixa, Botany *Index*.

ARNSTADE, a town of Germany, in Thuringia, on the river Gera. E. Long. 11. 3. N. Lat. 50. 54.

ARNULPH, or Ernulph, biſhop of Rocheſter in the reign of Henry I. He was born in France, where he was ſome time a monk of St Lucian de Beauvais. The monks led moſt irregular lives in this monaſtery; for which reaſon he reſolved to quit it, but firſt took the advice of Lanfranc archbiſhop of Canterbury, under whom he had ſtudied in the abbey of Bec, when Lanfranc was prior of that monaſtery. This prelate invited him over to England, and placed him in the monaſtery of Canterbury, where he lived a private monk till Lanfranc's death. When Anſelm came to the archiepiſcopal ſee, Arnulph was made prior of the monaſtery of Canterbury, and afterwards abbot of Peterborough. In 1115, he was conſecrated biſhop of Rocheſter, which ſee he held nine years, and died in March 1124, aged 84.

Arnulph wrote, 1. A piece in Latin concerning the foundation, endowment, charters, laws, and other things relating to the church of Rocheſter: it is generally known by the title of *Textus Roffenſis*, and is preſerved in the archives of the cathedral church of Rocheſter. 2. An Epiſtle in Anſwer to ſome Queſtions of Lambert abbot of Munſter; and, 3. An Epiſtle on inceſtuous Marriage.

ARNUS, now *Arno*, a very rapid river of Tuſcany, which it divides, and in its courſe waſhes Florence and Piſa; riſing in the Apennines, to the eaſt of Florence, near a village called *S. Maria della Gratie*, on the borders of Romagna, 15 miles to the weſt of the ſources of the Tiber; and then turning ſouthwards towards Arretium, it is there increaſed by the lakes of the Clanis; after which it runs weſtward, dividing Florence into two parts, and at length waſhing Piſa, falls eight miles below it into the Tuſcan ſea.

ARNWAY, John, a clergyman diſtinguiſhed by his benevolence and loyalty to King Charles I. was deſcended from a very good family in the county of Salop, from which he inherited a conſiderable eſtate. He was educated at Oxford; and, having received holy orders, obtained the rectories of Hodnet and Ightfield, where he diſtinguiſhed himſelf by his piety and exemplary charity: for it was his cuſtom to clothe annually 12 poor people, and every Sunday to entertain as many at his table, not only plentifully, but with intimacy and reſpect. The civil war breaking out, he preached againſt rebellion, and raiſed and clothed eight troopers for the ſervice of King Charles I. upon which his houſe

Arobe ‖ Arpagius.

was plundered by the parliament's army. He then went to Oxford to ſerve the king in perſon, which ſubjected him to a new train of misfortunes: for his eſtate was ſoon after ſequeſtered, and himſelf impriſoned till the king's death; after which he went to the Hague, where he publiſhed, 1. The Tablet, or the Moderation of Charles I. the Martyr; and, 2. An Alarm to the Subjects of England. He at laſt went to Virginia, where he died in 1653.

AROBE. See ARROBAS.

AROLEO, an American weight, equal to 25 of our pounds.

AROMA PHILOSOPHORUM, denotes either ſaffron, or the aroph of Paracelſus; as *aroma germanicum* denotes elecampane. See AROPH.

AROMATA, in *Ancient Geography*, a town of Lydia, famous for its generous wines; and hence the appellation, (Strabo.) Alſo the name of a trading town and promontory of Ethiopia, at the termination of the Sinus Avalites of the Red ſea, (Arrian).

AROMATIC, an appellation given to ſuch plants as yield a briſk fragrant ſmell, and a warm taſte; as all kinds of ſpices, &c. See MATERIA MEDICA.

ARONA, a town of Italy, in the duchy of Milan, with a ſtrong caſtle. It ſtands on the lake Maggiore. E. Long. 8. 25. N. Lat. 45. 41.

ARONCHES, a town of Portugal, in Alentejo, on the confines of Spain, ſeated on the river Caro. It is well fortified, and has about 500 inhabitants. W. Long. 5. 16. N. Lat. 14. 39.

AROOL, a town of the empire of Ruſſia, in the Ukraine, ſeated on the river Occa. E. Long. 38. 15. N. Lat. 51. 48.

AROPH, a contraction of *aroma philoſophorum*; a name given to ſaffron.

AROPH Paracelſi, a name given to a kind of chemical flowers, probably of the ſame nature with the Ens Veneris, elegantly prepared by ſublimation from equal quantities of lapis hæmatitis and ſal ammoniac.

AROPH is alſo a term uſed frequently by Paracelſus in a ſenſe ſynonymous with *lithontriptic*.

AROSBAY, a town of the Eaſt Indies, on the coaſt of the iſland of Madura, near Java. E. Long. 14. 30. N. Lat. 9. 30.

AROURA, a Grecian meaſure of 50 feet. It was more frequently uſed for a ſquare meaſure of half the plethron. The Egyptian aroura was the ſquare of 100 feet.

ARPAD, in *Ancient Geography*, is thought to have been a city of Syria. It was always placed with Hamath, (2 Kings xviii. 34. xix. 13. Iſaiah x. 9. xxxvi. 19. xxxvii. 13. Jerem. xlix. 25.). Sennacherib boaſts of having reduced Arpad and Hamath, or of having deſtroyed the gods of theſe two places. Hamath is known to be the ſame with Emeſa; and it is thought that Arpad is the ſame with Arad or Arvad, as it is ſometimes called in Hebrew. See ARAD.

ARPAGIUS, or HARPAGIUS, among the ancients, a perſon who died in the cradle, at leaſt in early youth. The word is formed from the Greek ἁρπάζω, *I ſnatch*. The Romans made no funerals for their *arpagii*. They neither burnt their bodies, nor made tombs, monuments, or epitaphs for them; which occaſioned Juvenal to ſay,

——*Terra claudatur infans*
Et minor ipſo tumulo.

Arpagius ‖ [illegible]

In after times it became the cuſtom to burn ſuch as had lived to the age of 40 days, and buried [illegible] theſe they called Ἁρπακτοι, or Ἁρπαγμενοι [illegible] *raviſhed*. The uſage ſeems to have been borrowed from the Greeks; among whom, Euſtathius aſſures us, it was the cuſtom never to bury their children either by night or full day, but at the firſt appearance of the morning; and that they did not call their departure by the name of *death*, but by a ſofter appellation, Ἡμέρας ἁρπαγὴ, importing that they were raviſhed by Aurora, or taken away to her embraces.

ARPENT, ſignifies an acre or furlong of ground; and according to the old French account in Doomſday-book, 100 perches make an arpent. The moſt ordinary acre, called *l'arpent de France*, is 100 perches ſquare: but ſome account it but half an acre.

ARPHAXAD, the ſon of Shem and father of Salah. Arphaxad was born in the year of the world 1658, a year after the deluge, and died in the year of the world 2096, at the age of 438 years, (Gen. xi. 12, &c.).

ARPI. See *Argos Hippium*.

ARPINAS, or ARPINO, JOSEPH CÆSAR, a famous painter, born in the year 1560, at the caſtle of Arpinas, in the kingdom of Naples. He lived in great intimacy with Pope Clement VIII. who conferred upon him the honour of knighthood, and beſtowed on him many other marks of his friendſhip. In the year 1600, he went to Paris with Cardinal Aldobrandin, who was ſent legate to the French court on the marriage of Henry IV. with Mary of Medicis. His Chriſtian majeſty gave Arpinas many conſiderable preſents, and created him a knight of St Michael. The colouring of this painter is thought to be cold and inanimate; yet there is ſpirit in his deſigns, and his compoſitions have ſomewhat of fire and elevation. The touches of his pencil being free and bold, give therefore pleaſure to connoiſſeurs in painting; but they are generally incorrect. What he painted of the Roman hiſtory is the moſt eſteemed of all his works. The following pieces of this maſter were in the late royal collection of France, viz. the Nativity of our Saviour, Diana and Acteon, the Rape of Europa, and a Suſanna. He died at Rome in 1640.

ARPINUM, a town of the Volſci, a little to the eaſt of the confluence of the rivers Liris and Fibrenus, in the Terra di Lavora; now decayed, and called *Arpino*. It was the native place of Cicero, and of Caius Marius, (Salluſt.)

ARQUA, a town of Italy, in the Paduan, and territory of Venice, remarkable for the tomb of Petrarch. E. Long. 11. 43. N. Lat. 45. 43.

ARQUEBUS. See HARQUEBUS.

ARQUES, a town of Normandy, now the department of the Lower Seine, in France, ſeated on a ſmall river of the ſame name. E. Long. 1. 30. N. Lat. 49. 54.

ARRACHEE, in *Heraldry*, a term applied to the repreſentations of plants torn up by the roots.

ARRACK. See ARACK.

ARRAGON, a province of Spain, bounded on the north by the Pyrenean mountains, which ſeparate it

Arraignment. from France; on the weſt by Navarre and the two Caſtiles; on the ſouth, by Valencia; and on the eaſt, by Catalonia. It is in length about 180 miles, and in breadth 149; but the land is mountainous, dry, ſandy or ſtony, badly cultivated, and worſe peopled. However it does not want rivers; for beſides the Ebro, which croſſes it in the middle, there are the Xalo, the Cinca, the Galego, and the Arragon. The air is pure and wholeſome; and there are mines of iron, and ſome ſay of gold. The moſt fertile parts are about the rivers: for there the land produces corn, wine, oil, flax, hemp, various fruits, and a ſmall quantity of ſaffron, beſides large flocks of ſheep, and plenty of game in the woods.

The Arragoneſe have the character of being bold, courageous, and well bred; but poſitive in their opinions, and bigotted in their religion. Theſe were the firſt of the Spaniards that threw off the Mooriſh yoke. Saragoſſa is the capital of this province; and the other chief towns are Balbaſtro, Jaca, Sarazona, Haeſca, Calatajud, Albarrazin, Trevel, Daroca, and Boria.

ARRAIGNMENT, in *Law*, the arraigning or ſetting a thing in order, as a perſon is ſaid to arraign a writ of novel diſſeiſin, who prepares and fits it for trial.

Arraignment is moſt properly uſed to call a perſon to anſwer in form of law upon an indictment, &c.

When brought to the bar, the criminal is called upon by name to hold up his hand; which though it may ſeem a trifling circumſtance, yet is of this importance, that by the holding up of his hand *conſtat de perſona*, and he owns himſelf to be of that name by which he is called. However it is not an indiſpenſible ceremony; for being calculated merely for the purpoſe of identifying the perſon, any other acknowledgement will anſwer the purpoſe as well: therefore, if the priſoner obſtinately and contemptuouſly refuſes to hold up his hand, but confeſſes he is the perſon named, it is fully ſufficient.

Then the indictment is to be read to him diſtinctly in the Engliſh tongue (which was law, even while all other proceedings were in Latin), that he may fully underſtand his charge. After which it is to be demanded of him, whether he be guilty of the crime whereof he ſtands indicted, or not guilty?

When a criminal is arraigned he either ſtands mute, or confeſſes the fact, or elſe he pleads to the indictment.

1. If he ſays nothing, the court ought *ex officio* to impannel a jury to inquire whether he ſtands obſtinately mute, or whether he be dumb *ex viſitatione Dei*. If the latter appears to be the caſe, the judges of the court (who are to be of counſel for the priſoner, and to ſee that he hath law and juſtice) ſhall proceed to the trial, and examine all points as if he had pleaded not guilty. But whether judgment of death can be given againſt ſuch a priſoner, who hath never pleaded, and can ſay nothing in arreſt of judgment, is a point yet undetermined.

If he be found to be obſtinately mute (which a priſoner hath been held to be that hath cut his own tongue), then, if it be on an indictment of high treaſon, it hath long been clearly ſettled, that ſtanding mute is equivalent to a conviction, and he ſhall receive the ſame judgment and execution.

The Engliſh judgment of penance for ſtanding mute was as follows: That the priſoner be remanded to the priſon from whence he came, and put into a low dark chamber; and there be laid on his back, on the bare floor, naked, unleſs where decency forbids; that there be placed upon his body as great a weight of iron as he could bear, and more; that he have no ſuſtenance, ſave only, on the firſt day, three morſels of the worſt bread; and, on the ſecond day, three draughts of ſtanding water that ſhould be neareſt to the priſon door; and in this ſituation this ſhould be alternately his daily diet, *till he died*, or, as anciently the judgment ran, *till he anſwered*. Arraignment.

It hath been doubted whether this puniſhment ſubſiſted at the common law, or was introduced in conſequence of the ſtatute Weſtm. I. 3 Edw. I. c. 12. which ſeems to be the better opinion. For not a word of it is mentioned in Glanvil or Bracton, or in any ancient author, caſe, or record (that hath yet been produced), previous to the reign of Edward I.: but there are inſtances on record in the reign of Henry III. where perſons accuſed of felony, and ſtanding mute, were tried in a particular manner, by two ſucceſſive juries, and convicted; and it is aſſerted by the judges in 8 Henry IV. that, by the common law before the ſtatute, ſtanding mute on an appeal amounted to a conviction of the felony. This ſtatute of Edward I. directs ſuch perſons, "as will not put themſelves upon inqueſts of felonies before the judges at the ſuit of the king, to be put into hard and ſtrong priſon (*ſoient mys en la priſone fort et dure*) as thoſe which refuſe to be at the common law of the land." And, immediately after this ſtatute, the form of the judgment appears in Fleta and Britton to have been only a very ſtrait confinement in priſon, with hardly any degree of ſuſtenance; but no weight is directed to be laid upon the body, ſo as to haſten the death of the miſerable ſufferer: and indeed any ſurcharge of puniſhment on perſons adjudged to penance, ſo as to ſhorten their lives, is reckoned by Horne in the Mirror as a ſpecies of criminal homicide. It alſo clearly appears, by a record of 31 Edw. III. that the priſoner might then poſſibly ſubſiſt for 40 days under this lingering puniſhment. It is therefore imagined that the practice of loading him with weights, or, as it is uſually called, *preſſing him to death*, was gradually introduced between 31 Edward III. and 8 Henry IV. at which laſt period it firſt appears upon the books; being intended as a ſpecies of mercy to the delinquent, by delivering him the ſooner from his torment: and hence it is alſo probable, that the duration of the penance was then firſt altered; and inſtead of continuing *till he anſwered*, it was directly to continue *till he died*, which muſt very ſoon happen under an enormous preſſure.

The uncertainty of its original, the doubts that were conceived of its legality, and the repugnance of its theory (for it rarely was carried into practice) to the humanity of the laws of England, all concurred to require a legiſlative abolition of this cruel proceſs, and a reſtitution of the ancient common law; whereby the ſtanding mute in felony, as well as in treaſon and in treſpaſs, amounted to a confeſſion of the charge.

2. If the priſoner made a ſimple and plain confeſſion, the court hath nothing to do but to award judgment: but it is uſually very backward in receiving and recording

Arran. cording ſuch confeſſion, out of tenderneſs to the life of the ſubject; and will generally adviſe the priſoner to retract it, and,

3. Plead to the indictment; as to which, ſee the article *Plea of Indictment*.

ARRAN, an iſland of Scotland, in the frith of Clyde, between Kintyre and Cunningham. Of this iſland the beſt deſcription we have is that given by Mr Pennant in his Tour through Scotland, vol. ii. 172—184.

"Arran, or properly *Arr-inn*, or, 'the iſland of mountains,' ſeems not to have been noticed by the ancients, notwithſtanding it muſt have been known to the Romans, whoſe navy, from the time of Agricola, had its ſtation in the *Glotta Eſtuarium*, or the Frith of Clyde. Camden, indeed, makes this iſland the Glotta of Antonine, but no ſuch name occurs in his Itinerary: it was therefore beſtowed on Arran by ſome of his commentators. By the immenſe cairns, the vaſt monumental ſtones, and many relicks of Druidiſm, this iſland muſt have been conſiderable in very ancient times. Here are ſtill traditions of the hero Fingal, or Fin Mac Coul, who is ſuppoſed here to have enjoyed the pleaſures of the chaſe; and many places retain his name: but I can diſcover nothing but oral hiſtory that relates to the iſland till the time of Magnus the Barefooted, the Norwegian victor, who probably included Arran in his conqueſts of Kintyre. If he did not conquer that iſland, it was certainly included among thoſe that Donald Bane was to cede; for it appears that Acho, one of the ſucceſſors of Magnus, in 1263, laid claim to Arran, Bute, and the Cumbrays, in conſequence of that promiſe: the two firſt he ſubdued, but the defeat he met with at Largs ſoon obliged him to give up his conqueſts. Arran was the property of the crown. Robert Bruce retired thither during his diſtreſſes, and met with protection from his faithful vaſſals. Numbers of them followed his fortunes; and after the battle of Bannockburn, he rewarded ſeveral, ſuch as the Maccooks, Mackinnons, Macbrides, and Maclouis, or Fullertons, with different charters of lands in their native country. All theſe are now abſorbed by this great family, except the Fullertons, and a Stewart, deſcended from a ſon of Robert III. who gave him a ſettlement here. In the time of the Dean of the Iſles, his deſcendant poſſeſſed Caſtle Douan; and *he and his kindd*, ſays the Dean, *are the beſt men in that countrey*. About the year 1334, this iſland appears to have formed part of the eſtate of Robert Stewart, great ſteward of Scotland, afterwards Robert II. At that time they took arms to ſupport the cauſe of their maſter; who afterwards, in reward, not only granted at their requeſt an immunity from their annual tribute of corn, but added ſeveral new privileges, and a donative to all the inhabitants that were preſent. In 1456, the whole iſland was ravaged by Donald earl of Roſs and lord of the Iſles. At that period, it was ſtill the property of James II.; but in the reign of his ſucceſſor James III. when that monarch matched his ſiſter to Thomas lord Boyd, he created him earl of Arran, and gave him the iſland as a portion. Soon after, on the diſgrace of that family, he cauſed the counteſs to be divorced from her unfortunate huſband; and beſtowed both the lady and iſland on Sir James Hamilton, in whoſe family it continues to this time, a very few farms excepted.

"Arran is of great extent, being 23 miles from Arran.
Sgreadan Point north to [illegible]; and the number of inhabitants are about 7000, who chiefly inhabit the coaſts; the far greater part of the country being uninhabited by reaſon of the vaſt and barren mountains. Here are only two pariſhes, Kilbride and Kilmorie; with a ſort of chapel of eaſe to each, founded in the laſt century, in the golden age of this iſland, when it was bleſſed with Anne ducheſs of Hamilton, whoſe amiable diſpoſition and humane attention to the welfare of Arran render at this diſtant time her memory dear to every inhabitant. The principal mountains of Arran are, Goatfield, or Gaoilbheinn, or "the mountain of the winds," of a height equal to moſt of the Scotiſh Alps, compoſed of immenſe piles of moorſtone, in form of wool packs, clothed only with lichens and moſſes, inhabited by eagles and ptarmigens: Beinbharrain, or "the ſharp-pointed;" Ceum-na-caillich, "the ſtep of the carline or old hag;" and Grianan-Athol, that yields to none in ruggedneſs. The lakes are, Loch-jorſa, where ſalmon come to ſpawn; Lochtana; Loch-nah-jura, on the top of a high hill; Loch-mhachrai; and Loch-knoc-a-charbeil, full of large eels. The chief rivers are, Abhan-mhor, Moina-mhor, Slondrai-machrei, and Jorſa; the two laſt remarkable for the abundance of ſalmon.

"The quadrupeds are very few; only otters, wild cats, ſhrew mice, rabbits, and bats: the ſtags, which uſed to abound, are now reduced to about a dozen. The birds are, eagles, hooded crows, wild pigeons, ſtares, black game, grous, ptarmigans, daws, green plovers, and curlews. It may be remarked, that the partridge at preſent inhabits this iſland, a proof of the advancement of agriculture.

"The climate is very ſevere: for beſides the violence of wind, the cold is very rigorous; and ſnow lay here in the valleys for 13 weeks of the laſt winter. In ſummer, the air is remarkably ſalubrious; and many invalids reſort here on that account, and to drink the whey of goats milk.

"The principal diſeaſe here is the pleuriſy: ſmall pox, meaſles, and chincough, viſit the iſland once in ſeven or eight years. The practice of bleeding twice every year ſeems to have been intended as a preventive againſt the pleuriſy: but it is now performed with the utmoſt regularity at ſpring and fall. The duke of Hamilton keeps a ſurgeon in pay; who at thoſe ſeaſons makes a tour of the iſland. On notice of his approach, the inhabitants of each farm aſſemble in the open air; extend their arms; and are bled into a hole made in the ground, the common receptacle of the vital fluid. In burning fevers, a tea of *wood ſorrel* is uſed with ſucceſs, to allay the heat. An infuſion of *ramſons*, or *allium urſinum*, in brandy, is eſteemed here a good remedy for the gravel.

"The men are ſtrong, tall, and well made; all ſpeak the Erſe language, but the ancient habit is entirely laid aſide. Their diet is chiefly potatoes and meal; and during winter, ſome dried mutton or goat is added to their hard fare. A deep dejection appears in general through the countenances of all: no time can be ſpared for amuſement of any kind; the whole being given for procuring the means of paying their rent, of laying in their fuel, or getting a ſcanty pittance of meat and clothing.

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"The leaſes of farms are 19 years. The ſucceeding tenants generally find the ground little better than a *caput mortuum*: and for this reaſon: Should they at the expiration of the leaſe leave the lands in a good ſtate, ſome avaricious neighbours would have the preference in the next ſetting, by offering a price more than the perſon who had expended part of his ſubſtance in enriching the farm could poſſibly do. This induces them to leave it in the original ſtate. The method of ſetting a farm is very ſingular; each is commonly poſſeſſed by a number of ſmall tenants; thus a farm of 40l. a-year is occupied by 18 different people, who by their leaſes are bound, conjunctly and ſeverally, for the payment of the rent to the proprietor. Theſe live in the farm in houſes cluſtered together, ſo that each farm appears like a little village. The tenants annually divide the arable land by lot; each has his ridge of land, to which he puts his mark, ſuch as he would do to any writing; and this ſpecies of farm is called *run-rig*, (i. e.) ridge. They join in ploughing; every one keeps a horſe or more; and the number of thoſe animals conſumes ſo much corn, as often to occaſion a ſcarcity; the corn and peas raiſed being (much of it) deſigned for their ſubſiſtence, and that of the cattle, during the long winter. The paſture and moor land annexed to the farm is common to all the poſſeſſors. All the farms are open. Encloſures of any form, except in two or three places, are quite unknown: ſo that there muſt be a great loſs of time in preſerving their corn, &c. from treſpaſs. The uſual manure is ſea plants, coral and ſhells. The run-rig farms are now diſcouraged: but ſince the tenements are ſet by roup or auction, and advanced by an unnatural force to above double the old rent, without any allowance for encloſing, any example ſet in agriculture, any ſecurity of tenure by lengthening the leaſes, affairs will turn retrograde, and the farms relapſe into their old ſtate of rudeneſs; migration will increaſe (for it has begun), and the rents be reduced even below their former value: the late rents were ſcarce 1200l. a-year; the expected rents 3000l.

"The produce of the iſland is oats; of which about 5000 bolls, each equal to nine Wincheſter buſhels, are ſown, 500 of beans, a few peas; and above 1000 bolls of potatoes are annually ſet: notwithſtanding this, 500 bolls of oat meal are annually imported, to ſubſiſt the natives.

"The live ſtock of the iſland is 3183 milch cows; 2000 cattle, from one to three years old; 1058 horſes; 1500 ſheep; and 500 goats: many of the two laſt are killed at Michaelmas and dried for winter-proviſion, or ſold at Greenock. The cattle are ſold from 40 to 50s. per head, which brings into the iſland about 1200l. per annum: I think that the ſale of horſes alſo brings in about 300l. Hogs were introduced here only two years ago. The herring-fiſhery round the iſland brings in 300l. the ſale of herring-nets 100l. and that of thread about 300l. for a good deal of flax is ſown here. Theſe are the exports of the iſland; but the money that goes out for mere neceſſaries is a melancholy drawback.

"The women manufacture the wool for the clothing of their families; they ſet the potatoes and dreſs and ſpin the flax. They make butter for exportation, and cheeſe for their own uſe.

"The inhabitants in general are ſober, religious, and induſtrious; great part of the ſummer is employed in getting peat for fuel, the only kind in uſe here; or in building or repairing their houſes, for the badneſs of the materials requires annual repairs: before and after harveſt, they are buſied in the herring fiſhery; and during winter the men make their herring nets; while the women are employed in ſpinning their linen and woollen yarn. The light they often uſe is that of lamps. From the beginning of February to the end of May, if the weather permits, they are engaged in labouring their ground: in autumn they burn a great quantity of fern, to make kelp. So that, excepting at new-year's day, at marriages, or at the two or three fairs in that iſland, they have no leiſure for any amuſements: no wonder then at their depreſſion of ſpirits.

Arrangement, Arras.

"Arran forms part of the county of Bute, and is ſubject to the ſame ſort of government: but, beſides, juſtice is adminiſtered at the baron's bailie-court, who has power to fine as high as 20s.; can decide in matters of property not exceeding 40s.; can impriſon for a month; and put delinquents into the ſtocks for three hours, but that only during day-time."

In this iſland there are many of thoſe rude antiquities or monuments called *cairns*, *druidical circles*, &c. See Cairns.

ARRANGEMENT, or Rangement, the diſpoſition of the parts of a whole, in a certain order.

The modern philoſophy ſhows us, that the diverſity of the colours of bodies depends entirely on the ſituation and arrangement of the parts, which reflect the light differently; the diverſity of taſtes and ſmells on the different arrangements of the pores, which render them differently ſenſible; and the general diverſity of bodies on the different arrangement of their parts. The happy arrangement of words makes one of the greateſt beauties of diſcourſe.

ARRAS, the capital city of Artois, a province in the French Netherlands. It is ſeated on a mountain; and the parts about it are full of quarries, where they get ſtone for building. It is divided into two parts, the town and the city. The abbé of St Vedaſt is lord of the town, and the biſhop of Arras of the city, which is the leaſt part. They are divided by a ſtrong wall, a large foſſe, and the little river Chrinchron, which 100 paces below falls into the Scarp. They are both well fortified, encloſed by high ramparts, and by double deep foſſes, which in ſeveral places are cut out of the rock. It has four gates; and ſince the French are become maſters of it, has a ſtrong citadel with five baſtions. The moſt remarkable places are, the great ſquare where the principal market is kept; this is full of fine buildings, with piazzas all round it like thoſe of Covent-garden. Not far from this is the leſſer market, which contains the town-houſe, a very noble ſtructure, with a high tower covered with a crown, on the top of which is a brazen lion which ſerves for a vane. In the midſt of this market is the chapel of the Holy Candle, which the Papiſts pretend was brought by the Virgin Mary herſelf above 600 years ago, when the city was afflicted with divers diſeaſes, and every one that touched the candle was cured; it is kept in a ſilver ſhrine. This chapel has a ſpire ſteeple, adorned with ſeveral ſtatues. The cathedral church of Notre-Dame ſtands in the city: it is a very large Gothic building, extremely

Arras
||
Arreſt.

extremely well adorned; the tower is very high, and has a fine clock embellished with little figures in bronze, which repreſent the paſſion of Jeſus Chriſt; they play before the bell to ſtrike the hours and half hours. In this church there is a ſilver ſhrine, enriched with pearls and diamonds, which contains a ſort of wood, which they call *manna*, that they ſay fell from heaven in the time of a great drought, about 1400 years ago: they carry it very ſolemnly in proceſſion when they want rain. The abbey-church of St Vedaſt is the greateſt ornament of Arras, it being adorned with a fine ſteeple, and ſeats for the monks of admirable workmanſhip; the pulpit is of braſs, faſhioned like a tree, ſupported by two bears of the ſame metal, ſitting on their hind legs; there are little bears in different poſtures coming to climb up the tree. The chimes are remarkable for the different tunes which they play. There are 11 pariſh churches, and a great many convents of men and women. It is from this city that the tapeſtry called *arras hangings* takes its denomination. E Long. 2. 56. N. Lat. 50. 17.

ARRAS, or *Araxes*, is alſo the name of a river of Georgia, which diſcharges itſelf into the Caſpian ſea.

ARRAY, in *Law*, the ranking or ſetting forth of a jury, or inqueſt of men impanelled on a cauſe.

Battle-Array, the order or diſpoſition of an army, drawn up with a view to engage the enemy. See ARMY.

ARRAYERS, or ARRAGERS, ARRAITORES, is uſed in ſome ancient ſtatutes, for ſuch officers as had care of the ſoldiers armour, and ſaw them duly accoutred in their kinds. In ſome reigns, commiſſioners have been appointed for this purpoſe. Such were the commiſſioners of array appointed by King Charles I. in the year 1642.

ARREARS, the remainder of a ſum due, or money remaining in the hands of an accountant. It likewiſe ſignifies the money due for rent, wages, &c. or what remains unpaid of penſions, taxes, &c.

ARRENTATION, in the foreſt laws, implies the licenſing the owner of lands in a foreſt to encloſe them with a low hedge and a ſmall ditch, in conſideration of a yearly rent.

ARREST, in *Engliſh Law*, (from the French word *arreſter*, to *ſtop* or *ſtay*), is the reſtraint of a man's perſon, obliging him to be obedient to the law; and is defined to be the execution of the command of ſome court of record or office of juſtice. An arreſt is the beginning of impriſonment; where a man is firſt taken, and reſtrained of his liberty, by power or colour of a lawful warrant.

Arreſts are either in *civil* or *criminal* caſes.

1. An arreſt in a *civil cauſe* is defined to be the apprehending or reſtraining one's perſon by proceſs in execution of the command of ſome court.

An arreſt muſt be by corporal ſeizing or touching the defender's body; after which the bailiff may juſtify breaking open the houſe in which he is, to take him: otherwiſe he has no ſuch power; but muſt watch his opportunity to arreſt him. For every man's houſe is looked upon by the law to be his caſtle of defence and aſylum, wherein he ſhould ſuffer no violence. Which principle is carried ſo far in the civil law, that, for the moſt part, not ſo much as a common citation or ſummons, much leſs an arreſt, can be executed upon a man within his own walls. Peers of the realm, Arreſt.
members of parliament, and corporations, are privileged from arreſts; and of courts from other writs. And againſt them the proceſs to compel appearance muſt be by ſummons and diſtreſs infinite, inſtead of a *capias*. Alſo clerks, attorneys, and all other perſons attending the courts of juſtice (for attorneys being officers of the court, are always ſuppoſed to be there attending) are not liable to be arreſted by the ordinary proceſs of the court, but muſt be ſued by bill (which is only a [illegible] *privilege*), as being perſonally preſent in court. Clergymen performing divine ſervice, and not merely ſtaying in the church with a fraudulent deſign, are for the time privileged from arreſts, by ſtatute 5 Edw. III. c. 5. and 1 Rich. II. c. 16.; as likewiſe members of convocation actually attending thereon, by ſtatute 8 Hen. VI. c. 1. Suitors, witneſſes, and other perſons, neceſſarily attending any courts of record upon buſineſs, are not to be arreſted during their actual attendance, which includes the neceſſary coming and returning. Seamen in the king's ſervice are privileged from arreſts for debts under 20l. (1 Geo. II. c. 14. and 14 Geo. II. c. 38.); and ſoldiers or marines are not liable to arreſts for a debt of leſs than 10l. (30 Geo. II. c. 6. 11.) And no arreſt can be made in the king's preſence, nor within the verge of his royal palace, nor in any place where the king's juſtices are actually ſitting. The king hath moreover a ſpecial prerogative (which indeed is very ſeldom exerted), that he may by his *writ of protection* privilege a defendant from all perſonal, and many real ſuits, for one year at a time, and no longer; in reſpect of his being engaged in his ſervice out of the realm. And the king alſo by the common law might take his creditor into his protection, ſo that no one might ſue or arreſt him till the king's debt was paid: but by the ſtatute 25 Edw. III. c. 19. notwithſtanding ſuch protection, another creditor may proceed to judgment againſt him, with a ſtay of execution, till the king's debt be paid; unleſs ſuch creditor will undertake for the king's debt, and then he ſhall have execution for both. And, laſtly, By ſtatute 29 Car. II. c. 7. no arreſt can be made, nor proceſs ſerved, upon a Sunday, except for treaſon, felony, or breach of the peace.

2. An arreſt in a *criminal cauſe* is the apprehending or reſtraining one's perſon, in order to be forthcoming to anſwer an alleged crime. To this arreſt all perſons whatſoever are, without diſtinction, equally liable; and doors may be broken open to arreſt the offender: but no man is to be arreſted, unleſs charged with ſuch a crime as will at leaſt juſtify holding him to bail when taken. There is this difference alſo between arreſts in civil and criminal caſes, that none ſhall be arreſted for debt, treſpaſs, or other cauſe of action, but by virtue of a precept or commandment out of ſome court; but for treaſon, felony, or breach of the peace, any man may arreſt with or without warrant or precept. But the king cannot command any one by word of mouth to be arreſted; for he muſt do it by writ, or order of his courts, according to law: nor may the king arreſt any man for ſuſpicion of treaſon, or felony, as his ſubjects may; becauſe, if he doth wrong, the party cannot have an action againſt him.

Arreſts by private perſons are in ſome caſes commanded. Perſons preſent at the committing of a felony

Arrha || Arrhephoria.

lony may use their endeavours to apprehend the offender, under penalty of fine and imprisonment; and they are also, with the utmost diligence to pursue and endeavour to take all those who shall be guilty thereof out of their view, upon a hue and cry levied against them. By the vagrant act 17 Geo. II. c. 5. every person may apprehend beggars and vagrants; and every private person is bound to assist an officer requiring him to apprehend a felon.

In some cases likewise arrests by private persons are rewarded by law. By the 4 and 5 William and Mary, c. 8. persons apprehending highwaymen, and prosecuting them to a conviction, are entitled to a reward of 40l.; and if they are killed in the attempt, their executors, &c. are entitled to the like reward. By the 6 and 7 William III. c. 17. persons apprehending counterfeiters and clippers of the coin, and prosecuting them to conviction are entitled to 40l.

By 5 Ann, c. 31. persons who shall take any one guilty of burglary, or the felonious breaking and entering any house in the day time, and prosecute them to conviction, shall receive the sum of 40l. within one month after such conviction.

With regard to arrests by public officers, as watchmen, constables, &c. they are either made by their own authority, which differs but very little from the power of a private person; or they are made by a warrant from a justice of peace. See WARRANT.

Arrest of Judgment, in *Law*, the assigning just reason why judgment should not pass: as, Want of notice of the trial; a material defect in the pleading; when the record differs from the deed impleaded; when persons are misnamed; where more is given by the verdict than is laid in the declaration, &c. This may be done either in criminal or civil cases.

ARRESTMENT, in *Scots Law*, signifies the securing of a criminal till trial, or till he find caution to stand trial, in what are called *bailable crimes*. In civil cases, it signifies either the detaining of strangers, or natives *in meditatione fugæ*, till they find caution *judicio sisti*, or the attaching the effects of a stranger in order to found jurisdiction. But, in the most general acceptation of the word, it denotes that diligence by which a creditor detains the goods or effects of his debtor in the hands of third parties till the debt due to him be either paid or secured. See LAW.

ARRESTO FACTO SUPER BONIS, &c. a writ brought by a denizen against the goods of aliens found within this kingdom, as a recompense for goods taken from him in a foreign country.

ARRESTS, in *Farriery*, mangy tumours upon a horse's hinder legs, between the ham and the pastern.

ARRETIUM, (Cicero, Cæsar); *Arrhetium*, (Ptolemy); *Urbs Arrhetinorum*, (Polybius); one of the twelve ancient towns of Tuscany, near the Arnis and Clanis, situated in a pleasant valley. Now *Arezzo*, 42 miles east of Florence. E. Long. 13. 18. N. Lat. 43. 15.

ARRHALONARII, a sect of Christians, who held that the eucharist is neither the real flesh or blood of Christ, nor yet the sign of them; but only the pledge or earnest thereof.

ARRHEPHORIA, a feast among the Athenians, instituted in honour of Minerva, and Herse daughter of Cecrops. The word is composed of ἀῤῥητον, *mystery*, and φερω, *I carry*; on account of certain mysterious things which were carried in procession at this solemnity.—Boys, or, as some say, girls, between seven and twelve years of age, were the ministers that assisted at this feast, and were denominated ἀῤῥηφοροι. This feast was also called *Hersiphoria*, from the daughter of Cecrops, already mentioned.

Arrian || Arrow-Makers.

ARRIAN, a famous philosopher and historian under the emperor Hadrian and the two Antonines, was born at Nicomedia in Bithynia. His great learning and eloquence procured him the title of *The second Xenophon*, and raised him to the most considerable dignities at Rome, even the consulship itself. We have four books of his *Dissertations upon Epictetus*, whose scholar he had been; and his *History of Alexander the Great*, in seven books, is greatly admired by the best judges.

ARRIERE, the hinder or posterior part of any thing.

Arriere Ban, in the French customs, was a general proclamation, whereby the king summoned to war all that held of him, both his vassals, i. e. the nobless, and the vassals of his vassals.

Arriere Fee, or *Fief*, is a fee dependent on a superior one. These fees commenced, when the dukes and counts, rendering their governments hereditary in their families, distributed to their officers parts of the royal domains which they found in their respective provinces, and even permitted those officers to gratify the soldiers under them in the same manner.

ARROBAS, or AROBAS, a weight used in Spain, Portugal, and the foreign dominions of both. The arrobas of Portugal is also called *arata*, and contains thirty-two Lisbon pounds; that of Spain contains twenty-five Spanish pounds. In Peru it is called *arruse*.

ARROE, a small island of Denmark, in the Baltic sea, a little south of the island of Funen. It is eight miles in length, and about two in breadth; and produces corn, aniseed, black cattle, and horses. It has three parishes, the most considerable of which is Koping. It stands at the south side of the island, in the bottom of a bay, and has a port with some trade. E. Long. 9. 40. N. Lat. 55. 20.

ARROJO, DE ST SERVAN, a town of Spain, in Estremadura. W. Long. 5. 20. N. Lat. 38. 40.

ARRONDEE, in *Heraldry*, a cross, the arms of which are composed of sections of a circle, not opposite to each other, so as to make the arms bulge out thicker in one part than another; but the sections of each arm lying the same way, so that the arm is everywhere of an equal thickness, and all of them terminating at the edge of the escutcheon like the plain-cross.

ARROW, a missive weapon of offence, slender, pointed, and barbed, to be cast or shot with a bow. See ARCHERY.

Arrow Makers, are called *fletchers*; and were formerly, as well as bowyers, persons of great consequence in the commonwealth.

Arrow-heads and quarrels were to be well hocked or brased and hardened at the points with steel; the doing of which seems to have been the business of the arrow-smith.

Arrow-Head || Arſinoe.

Arrow-Head. See SAGITTARIA, BOTANY *Index*.

Arrow-Root. See MARANTA, BOTANY *Index*.

ARSACES, otherwiſe MITHRIDATES, a king of the Parthians, ſpoken of in the firſt book of Maccabees, xiv. 2. He conſiderably enlarged the kingdom of Parthia by his good conduct and valour. See PARTHIA.

ARSCHIN, in commerce, a long meaſure uſed in China to meaſure ſtuffs. Four arſchins make three yards of London.

ARSENAL, a royal or public magazine, or place appointed for the making and keeping of arms, neceſſary either for defence or aſſault. Some derive this word from *arx* a *fortreſs*; others from *ars*, denoting a *machine*; others again from *arx* and *ſenatus*, becauſe this was the defence of the ſenate: but the more probable opinion derives it from the Arabic *darſenaa*, which ſignifies *arſenal*.

The arſenal of Venice is the place where the galleys are built and laid up. The arſenal of Paris is that where the cannon or great guns are caſt. It has this inſcription over the gate:

Ætna hæc Henrico vulcania tela miniſtrat,
Tela Gigantæos debellatura furores.

There are arſenals, or ſtore-houſes, appropriated to naval furniture and equipments. At Marſeilles is the arſenal for the galleys; and at Toulon, Rochfort, and Breſt, are thoſe for the men of war.

ARSENIC. See MINERALOGY and CHEMISTRY *Index*.

ARSENIUS, a deacon of the Roman church, of great learning and piety. He was pitched upon by the pope to go to the emperor Theodoſius, as tutor to his ſon Arcadius. Arſenius arrived at Conſtantinople in the year 383. The emperor happening one day to go into the room where Arſenius was inſtructing Arcadius, his ſon was ſeated and the preceptor ſtanding; at this he was exceedingly diſpleaſed, took from his ſon the imperial ornaments, made Arſenius ſit in his place, and ordered Arcadius for the future to receive his leſſons ſtanding uncovered. Arcadius, however, profited but little by his tutor's inſtructions, for ſome time after he formed a deſign of deſpatching him. The officer to whom Arcadius had applied for this purpoſe, divulged the affair to Arſenius, who retired to the deſerts of Scete, where he paſſed many years in the exerciſes of the moſt ſtrict and fervent devotion. He died there, at 95 years of age.

ARSHOT, a town of the Auſtrian Netherlands, ſituated about 14 miles eaſt of the city of Mechlin, in E. Long. 4. 45. N. Lat. 51. 5.

ARSINOE, in *Ancient Geography*, a town of Egypt, on the weſt ſide of the Arabian gulf, near its extremity, to the ſouth of Hieropolis, (Strabo, Ptolemy); called *Cleopatris* by ſome. Another Arſinoe, a town of Cilicia, (Ptolemy); and the fifth of that name in Cilicia, (Stephanus); with a road or ſtation for ſhips, (Strabo). A third Arſinoe, in the ſouth of Cyprus, with a port between Citium and Salamis, (Strabo). A fourth, an inland town of Cyprus, called *Marium* formerly, (Stephanus). A fifth in the north of Cyprus, between Acamas and Soli, (Strabo); ſo called from Arſinoe, a queen of Egypt, Cyprus being in the hands of the Ptolemies. A ſixth Arſinoe, a maritime town of Cyrene, formerly called *Teuchira*. A ſeventh Arſinoe, in the Nomos Arſinoites, to the weſt of the Heracleotes, on the weſtern bank of the Nile, formerly called *Crocodilorum Urbs*. (Strabo), the name *Arſinoe* continued under Adrian, (Geor.) Ptolemy calls this Arſinoe an inland metropolis, and therefore at ſome diſtance from the Nile, with a port called *Ptolemais*. An eighth Arſinoe, a maritime town of Lycia; ſo called by Ptolemy Philadelphus, after the name of his conſort, which did not hold long, it afterwards recovering its ancient name *Patara*, (Strabo). A ninth, a town of the Troglodytæ, near the mouth of the Arabian gulf, which towards Ethiopia is terminated by a promontory called *Dire*, (Ptolemy). This Arſinoe is called *Berenice*, and the third of that name in this quarter, with the diſtinction *Epidires*, becauſe ſituated on a neck of land running out a great way into the ſea.

Art || Art.

ARSIS and THESIS, in *Muſic*, is a term applied to compoſitions in which one part riſes and the other falls.

ARSMART. See PERSICARIA, BOTANY *Index*.

ARSON, in *Engliſh Law*, is the malicious and wilful burning of the houſe or outhouſe of another man; which is felony at common law.

This is an offence of very great malignity, and much more pernicious to the public than ſimple theft: becauſe, firſt, it is an offence againſt that right of habitation which is acquired by the law of nature as well as by the laws of ſociety; next, becauſe of the terror and confuſion that neceſſarily attends it; and, laſtly, becauſe in ſimple theft the thing ſtolen only changes its maſter, but ſtill remains *in eſſe* for the benefit of the public; whereas by burning the very ſubſtance is abſolutely deſtroyed. It is alſo frequently more deſtructive than murder itſelf, of which too it is often the cauſe: ſince murder atrocious as it is, ſeldom extends beyond the felonious act deſigned, whereas fire too frequently involves in the common calamity perſons unknown to the incendiary, and not intended to be hurt by him, and friends as well as enemies.

ARSURA, in ancient cuſtoms, a term uſed for the melting of gold or ſilver, either to refine them, or to examine their value.—The method of doing this is explained at large in the Black Book of the Exchequer, aſcribed to Gervaiſe, in the chapter *De officio Militis Argentarii*, being in thoſe days of great uſe, on account of the various places and different manners in which the king's money was paid.

ARSURA, is alſo uſed for the loſs or diminution of the metal in the trial. In this ſenſe, a pound was ſaid *tot ardere denarios*, to loſe ſo many pennyweights.

ARSURA is alſo uſed for the duſt and ſweepings of ſilverſmiths, and others, who work in ſilver, melted down.

ART is defined by Lord Bacon, a proper diſpoſal of the things of nature by human thought and experience, ſo as to anſwer the ſeveral purpoſes of mankind; in which ſenſe *art* ſtands oppoſed to *nature*.

Art is principally uſed for a ſyſtem of rules ſerving to facilitate the performance of certain actions; in which ſenſe it ſtands oppoſed to *ſcience*, or a ſyſtem of ſpeculative principles.

Arts are commonly divided into *uſeful* or *mechanic*, *liberal* or *polite*. The former are thoſe wherein the hand

hand and *body* are more concerned than the mind; of which kind are moſt of thoſe which furniſh us with the *neceſſaries* of life, and are popularly known by the name of *trades*; as baking, brewing, carpentry, ſmithery, weaving, &c.—The latter are ſuch as depend more on the labour of the mind than that of the hand; they are the produce of the *imagination*, their eſſence conſiſts in *expreſſion*, and their end is *pleaſure*. Of this kind are poetry, painting, muſic, &c.

1 Origin and progreſs of the Arts.

Progreſs of the Arts. Some uſeful arts muſt be nearly coeval with the human race; for food, clothing, and habitation, even in their original ſimplicity, require ſome art. Many other arts are of ſuch antiquity as to place the inventors beyond the reach of tradition. Several have gradually crept into the world without an inventor. The buſy mind, however, accuſtomed to a beginning in things, cannot reſt till it finds or imagines a beginning to every art. The moſt probable conjectures of this nature the reader may ſee in the hiſtorical introductions to the different articles.

progreſs of uſeful arts. *Kames's Sketches*, Sk. V.

In all countries where the people are barbarous and illiterate, the progreſs of arts is extremely ſlow. It is vouched by an old French poem, that the virtues of the loadſtone were known in France before the year 1180. The mariner's compaſs was exhibited at Venice anno 1260, by Paulus Venetus, as his own invention. John Goya of Amalfi was the firſt who, many years afterward, uſed it in navigation; and alſo paſſed for being the inventor. Though it was uſed it China for navigation long before it was known in Europe, yet to this day it is not ſo perfect as in Europe. Inſtead of ſuſpending it in order to make it act freely, it is placed upon a bed of ſand, by which every motion of the ſhip diſturbs its operation. Hand-mills, termed *querns*, were early uſed for grinding corn; and when corn came to be raiſed in greater quantity, horſe-mills ſucceeded. Water-mills for grinding corn are deſcribed by Vitruvius. Wind-mills were known in Greece, and in Arabia as early as the ſeventh century; and yet no mention is made of them in Italy till the fourteenth. That they were not known in England in the reign of Henry VIII. appears from a houſehold book of an earl of Northumberland, cotemporary with that king, ſtating an allowance for three mill horſes, "two to draw in the mill, and one to carry ſtuff to and fro the mill." Water-mills for corn muſt in England have been of a later date. The ancients had mirror-glaſſes, and employed glaſs to imitate cryſtal vaſes and goblets; yet they never thought of uſing it in windows. In the 13th century, the Venetians were the only people who had the art of making cryſtal glaſs for mirrors. A clock that ſtrikes the hours was unknown in Europe till the end of the 12th century. And hence the cuſtom of employing men to proclaim the hours during night; which to this day continues in Germany, Flanders, and England. Galileo was the firſt who conceived an idea that a pendulum might be uſed for meaſuring time; and Huygens was the firſt who put the idea in execution, by making a pendulum clock. Hook, in the year 1660, invented a ſpiral ſpring for a watch, though a watch was far from being a new invention. Paper was made no earlier than the 14th century; and the invention of printing was a century later. Silk manufactures were long eſtabliſhed in Greece before ſilk-worms were introduced there. The manufacturers were provided with raw ſilk from Perſia: but that commerce being frequently interrupted by war, two monks, in the reign of Juſtinian, brought eggs of the ſilk-worm from Hindoſtan, and taught their countrymen the method of managing them.—The art of reading made a very ſlow progreſs. To encourage that art in England, the capital puniſhment for murder was remitted, if the criminal could but read, which in law language is termed *benefit of clergy*. One would imagine that the arts muſt have made a very rapid progreſs when ſo greatly favoured: but there is a ſignal proof of the contrary: for ſo ſmall an edition of the Bible as 600 copies, tranſlated into Engliſh in the reign of Henry VIII. was not wholly ſold off in three years. The people of England muſt have been profoundly ignorant in Queen Elizabeth's time, when a forged clauſe added to the 20th article of the Engliſh creed paſſed unnoticed till about 50 years ago.

Arts.

The diſcoveries of the Portugueſe on the weſt coaſt of Africa is a remarkable inſtance of the ſlow progreſs of arts. In the beginning of the 15th century, they were totally ignorant of that coaſt beyond Cape Non, 28 degrees north latitude. In 1410, the celebrated Prince Henry of Portugal fitted out a fleet for diſcoveries, which proceeded along the coaſt to Cape Bojadore in 28 deg. but had not courage to double it. In 1418, Triſtan Vaz diſcovered the iſland Porto Santo; and the year after, the iſland Madeira was diſcovered. In 1439, a Portugueſe captain doubled Cape Bajadore; and the next year the Portugueſe reached Cape Blanco, lat. 20 degrees. In 1446, Nuna Triſtan doubled Cape de Verd, lat. 14. 40. In 1448, Don Gonzallo Vallo took poſſeſſion of the Azores. In 1449, the iſlands of Cape de Verd were diſcovered for Don Henry. In 1471, Pedro d'Eſcovar diſcovered the iſland St Thomas and Prince's iſland. In 1484, Diego Cam diſcovered the kingdom of Congo. In 1486, Bartholomew Diaz, employed by John II. of Portugal, doubled the Cape of Good Hope, which he called *Cabo Tormentoſo*, from the tempeſtuous weather he found in the paſſage.

2 Cauſes which advanced the progreſs of arts.

The exertion of national ſpirit upon any particular art, promotes activity to proſecute other arts. The Romans, by conſtant ſtudy, came to excel in the art of war, which led them naturally to improve upon other arts. Having, in the progreſs of ſociety, acquired ſome degree of taſte and poliſh, a talent for writing broke forth. Nevius compoſed in verſe ſeven books of the Punic war; beſides comedies, replete with bitter raillery againſt the nobility. Ennius wrote annals, and an epic poem. Lucius Andronicus was the father of dramatic poetry in Rome. Pacuvius wrote tragedies. Plautus and Terence wrote comedies. Lucilius compoſed ſatires, which Cicero eſteems to be ſlight and void of erudition. Fabius Pictor, Cincius Alimentus, Piſo Frugi, Valerius Antias, and Cato, were rather annaliſts than hiſtorians, confining themſelves to naked facts, ranged in order of time. The genius of the Romans for the fine arts was much inflamed by Greek learning, when free intercourſe between the two nations was opened. Many of thoſe who made the greateſt figure in the Roman ſtate commenced

Arts. menced authors; Cæſar, Cicero, &c. Sylla compoſed memoirs of his own tranſactions, a work much eſteemed even in the days of Plutarch.

The progreſs of art ſeldom fails to be rapid, when a people happen to be rouſed out of a torpid ſtate by ſome fortunate change of circumſtances. Proſperity, contraſted with former abaſement, gives to the mind a ſpring, which is vigorouſly exerted in every new purſuit. The Athenians made but a mean figure under the tyranny of Piſiſtratus; but upon regaining freedom and independence, they were converted into heroes. Miletus, a Greek city of Ionia, being deſtroyed by the king of Perſia, and the inhabitants made ſlaves, the Athenians, deeply affected with the miſery of their brethren, boldly attacked the king in his own dominions, and burnt the city of Sardis. In leſs than 10 years after, they gained a ſignal victory at Marathon; and, under Themiſtocles, made head againſt that prodigious army with which Xerxes threatened utter ruin to Greece. Such proſperity produced its uſual effects: arts flouriſhed with arms, and Athens became the chief theatre for ſciences, as well as for fine arts. The reign of Auguſtus Cæſar, which put an end to the rancour of civil war, and reſtored peace to Rome, with the comforts of ſociety, proved an auſpicious era for literature; and produced a cloud of Latin hiſtorians, poets, and philoſophers, to whom the moderns are indebted for their taſte and talents. One who makes a figure rouſes emulation in all: one catches fire from another, and the national ſpirit is everywhere triumphant: claſſical works are compoſed, and uſeful diſcoveries made in every art and ſcience. With regard to Rome, it is true, that the Roman government under Auguſtus was in effect deſpotic: but deſpotiſm, in that ſingle inſtance, made no obſtruction to literature, it having been the policy of that reign to hide power as much as poſſible. A ſimilar revolution happened in Tuſcany about three centuries ago. That country having been divided into a number of ſmall republics, the people excited by mutual hatred between ſmall nations in cloſe neighbourhood, became ferocious and bloody, flaming with revenge for the ſlighteſt offence. Theſe republics being united under the great duke of Tuſcany, enjoyed the ſweets of peace in a mild government. That comfortable revolution, which made the deeper impreſſion by a retroſpect to recent calamities, rouſed the national ſpirit, and produced ardent application to arts and literature. The reſtoration of the royal family in England, which put an end to a cruel and envenomed civil war, promoted improvements of every kind; arts and induſtry made a rapid progreſs among the people, though left to themſelves by a weak and fluctuating adminiſtration. Had the nation, upon that favourable turn of fortune, been bleſſed with a ſucceſſion of able and virtuous princes, to what a height might not arts and ſciences have been carried! In Scotland, a favourable period for improvement was the reign of the firſt Robert, after ſhaking off the Engliſh yoke; but the domineering ſpirit of the feudal ſyſtem rendered every attempt abortive. The reſtoration of the royal family mentioned above, animated the legiſlature of Scotland to promote manufactures of various kinds: but in vain; for the union of the two crowns had introduced deſpotiſm into Scotland, which ſunk the genius of the people, and rendered them heartleſs and indolent. Liberty, indeed, and many other advantages, were procured to them by the union of the two kingdoms; but the ſalutary effects were long ſuſpended by mutual enmity, ſuch as commonly ſubſiſts between neighbouring nations. Enmity gradually wore out, and the eyes of the Scots were opened to the advantages of their preſent conſtitution; the national ſpirit was rouſed to emulate and to exceed; talents were exerted, hitherto latent; and Scotland at preſent makes a figure in arts and ſciences above what it ever made while an independent kingdom. Arts.

Another cauſe of activity and animation, is the being engaged in ſome important action of doubtful event; a ſtruggle for liberty, the reſiſting a potent invader, or the like. Greece, divided into ſmall ſtates frequently at war with each other, advanced literature and the fine arts to unrivalled perfection. The Corſicans, while engaged in a perilous war for defence of their liberties, exerted a vigorous national ſpirit; they founded a univerſity for arts and ſciences, a public library, and a public bank. After a long ſtupor during the dark ages of Chriſtianity, arts and literature revived among the turbulent ſtates of Italy. The Royal Society in London, and the academy of Sciences in Paris, were both of them inſtituted after civil wars that had animated the people and rouſed their activity.

As the progreſs of arts and ſciences toward perfection is greatly promoted by emulation, nothing is more fatal to an art or ſcience than to remove that ſpur, as where ſome extraordinary genius appears who ſoars above rivalſhip. Mathematics ſeem to be declining in Britain; the great Newton, having ſurpaſſed all the ancients, has not left to the moderns even the fainteſt hope of equalling him; and what man will enter the liſts who deſpairs of victory;

In a country thinly peopled, where even neceſſary arts want hands, it is common to ſee one perſon exerciſing more arts than one: in ſeveral parts of Scotland, one man ſerves as a phyſician, ſurgeon, and apothecary. In every populous country, even ſimple arts are ſplit into parts, and each part has an artiſt appropriated to it. In the large towns of ancient Egypt, a phyſician was confined to a ſingle diſeaſe. In mechanic arts that method is excellent. As a hand confined to a ſingle operation becomes both expert and expeditious, a mechanic art is perfected by having its different operations diſtributed among the greateſt number of hands: many hands are employed in making a watch, and a ſtill greater number in manufacturing a web of woollen cloth. Various arts or operations carried on by the ſame man, invigorate his mind, becauſe they exerciſe different faculties; and as he cannot be equally expert in every art or operation, he is frequently reduced to ſupply want of ſkill by thought and invention. Conſtant application, on the contrary, to a ſingle operation, confines the mind to a ſingle object, and excludes all thought and invention: in ſuch a train of life, the operator becomes dull and ſtupid, like a beaſt of burden. The difference is viſible in the manners of the people: in a country where, from want of hands, ſeveral occupations muſt be carried on by the ſame perſon, the people are knowing and converſable: in a populous country, where manufactures flouriſh, they are ignorant and unſociable. The ſame effect is equally viſible in countries where an

Arts. art or manufacture is confined to a certain claſs of men. It is viſible in Indoſtan, where the people are divided into caſts, which never mix even by marriage, and where every man follows his father's trade. The Dutch lint-boors are a ſimilar inſtance: the ſame families carry on the trade from generation to generation; and are accordingly ignorant and brutiſh even beyond other Dutch peaſants. The inhabitants of Buckhaven, a ſea port in the county of Fife, were originally a colony of foreigners, invited hither to teach our people the art of fiſhing. They continue fiſhers to this day, marry among themſelves, have little intercourſe with their neighbours, and are dull and ſtupid to a proverb.

3 Progreſs of the *fine arts.* Uſeful arts paved the way to fine arts. Men upon whom the former had beſtowed every convenience, turned their thoughts to the latter. Beauty was ſtudied in objects of ſight; and men of taſte attached themſelves to the fine arts, which multiplied their enjoyments, and improved their benevolence. Sculpture and painting made an early figure in Greece; which afforded plenty of beautiful originals to be copied in theſe imitative arts. Statuary, a more ſimple imitation than painting, was ſooner brought to perfection: the ſtatue of Jupiter by Phidias, and of Juno by Polycletes, though the admiration of all the world, were executed long before the art of light and ſhade was known. Apollodorus, and Zeuxis his diſciple, who flouriſhed in the 95th Olympiad, were the firſt who figured in that art. Another cauſe concurred to advance ſtatuary before painting in Greece, viz. a great demand for ſtatues of their gods. Architecture, as a fine art, made a ſlower progreſs. Proportions, upon which its elegance chiefly depends, cannot be accurately aſcertained, but by an infinity of trials in great buildings; a model cannot be relied on: for a large and a ſmall building, even of the ſame form, require different proportions.

4 Literary compoſitions. From the fine arts mentioned, we proceed to literature. It is agreed, among all antiquaries, that the firſt writings were in verſe, and that writing in proſe was of a much later date. The firſt Greek who wrote in proſe was Pherecides Syrus: the firſt Roman was Appius Cæcus, who compoſed a declamation againſt Pyrrhus. The four books of the Chatah Bhade, which is the ſacred book of Hindoſtan, are compoſed in verſe ſtanzas; and the Arabian compoſitions in proſe followed long after thoſe in verſe. To account for that ſingular fact, many learned pens have been employed; but without ſucceſs. By ſome it has been urged, that as memory is the only record of events where writing is unknown, hiſtory originally was compoſed in verſe for the ſake of memory. This is not ſatisfactory. To undertake the painful taſk of compoſing in verſe, merely for the ſake of memory, would require more foreſight than ever was exerted by a barbarian: not to mention that other means were uſed for preſerving the memory of remarkable events; a heap of ſtones, a pillar, or other object that catches the eye. The account given by Longinus is more ingenious. In a fragment of his treatiſe on verſe, the only part that remains, he obſerves, "that meaſure or verſe belongs to poetry, becauſe poetry repreſents the various paſſions with their language; for which reaſon the ancients, in their ordinary diſcourſe, delivered their thoughts in verſe rather than in proſe." Longinus thought, that anciently men were more expoſed to accidents and dangers, than when they were protected by good government and by fortified cities. But he ſeems not to have adverted, that fear and grief inſpired by dangers and misfortunes, are better ſuited to humble proſe than to elevated verſe. It may be added, that however natural poetical diction may be when one is animated with any vivid paſſion, it is not ſuppoſable that the ancients never wrote nor ſpoke but when excited by paſſion. Their hiſtory, their laws, their covenants, were certainly not compoſed in that tone of mind. Arts.

An important article in the progreſs of the fine arts, which writers have not ſufficiently attended to, will perhaps explain this myſtery. The article is the profeſſion of a bard, which ſprung up in early times before writing was known *, and died away gradually as writing became more and more common †.

The ſongs of the bards, being univerſal favourites, were certainly the firſt compoſitions that writing was employed upon: they would be carefully collected by the moſt ſkilful writers, in order to preſerve them in perpetual remembrance. The following part of the progreſs is obvious. People acquainted with no written compoſitions, but what were in verſe, compoſed in verſe their laws, their religious ceremonies, and every memorable tranſaction that was intended to be preſerved in memory by writing. But when ſubjects of writing multiplied, and became more and more involved; when people began to reaſon, to teach, and to harangue; they were obliged to deſcend to humble proſe: for to confine a writer or ſpeaker to verſe in handling ſubjects of that nature would be a burden unſupportable.

* See the article *Writing.*
† See *Bard.*

5 Hiſtory. The proſe compoſitions of early hiſtorians are all of them dramatic. A writer deſtitute of art is naturally prompted to relate facts as he ſaw them performed: he introduces his perſonages as ſpeaking and conferring; and he himſelf relates what was acted, and not ſpoke. The hiſtorical books of the Old Teſtament are compoſed in that mode; and ſo addicted to the dramatic are the authors of thoſe books, that they frequently introduce God himſelf into the dialogue. At the ſame time, the ſimplicity of that mode is happily ſuited to the poverty of every language in its early periods. The dramatic mode has a delicious effect in expreſſing ſentiment, and every thing that is ſimple and tender. Read, as an inſtance of a low incident becoming, by that means, not a little intereſting, Ruth i. 8. to iv. 16.

The dramatic mode is far from pleaſing ſo much in relating bare hiſtorical facts. Read, as an example, the ſtory of Adonijah in 1 Kings i. 11—49.

In that paſſage there are frequent repetitions; not however by the ſame perſon, but by different perſons, who have occaſion in the courſe of the ſtory to ſay the ſame things; which is natural in the dramatic mode, where things are repreſented preciſely as they were tranſacted. In that view, Homer's repetitions are a beauty, not a blemiſh; for they are confined to the dramatic part, and never occur in the narrative.

But the dramatic mode of compoſition, however pleaſing, is tedious and intolerable in a long hiſtory. In the progreſs of ſociety new appetites and new paſſions ariſe; men come to be involved with each other

in

Arts. in various connexions; incidents and events multiply, and hiſtory becomes intricate by an endleſs variety of circumſtances. Dialogue accordingly is more ſparingly uſed, and in hiſtory plain narration is mixed with it. Narration is as it were the ground-work; and dialogue is raiſed upon it, like flowers in embroidery. Homer is admitted by all to be the great maſter in that mode of compoſition.

The narrative mode came in time ſo to prevail, that in a long chain of hiſtory, the writer commonly leaves off dialogue altogether. Early writers of that kind appear to have very little judgment in diſtinguiſhing capital facts from minute circumſtances, ſuch as can be ſupplied by the reader without being mentioned. The hiſtory of the Trojan war by Dares Phrygius is a curious inſtance of that cold and creeping manner of compoſition. The Roman hiſtories before the time of Cicero are chronicles merely. Cato, Fabius Pictor, and Piſo, confined themſelves to naked facts. In the Auguſtæ Hiſtoriæ Scriptores we find nothing but a jejune narrative of facts, commonly of very little moment, concerning a degenerate people, without a ſingle incident that can rouſe the imagination or exerciſe the judgment. The monkiſh hiſtories are all of them compoſed in the ſame manner.

The dry narrative manner being very little intereſting or agreeable, a taſte for embelliſhment prompted ſome writers to be copious and verboſe. Saxo-Grammaticus, who in the 12th century compoſed in Latin a hiſtory of Denmark ſurpriſingly pure at that early period, is extremely verboſe and full of tautologies. Such a ſtyle, at any rate unpleaſant, is intolerable in a modern tongue, before it is enriched with a ſtock of phrates for expreſſing aptly the great variety of incidents that enter into hiſtory.

The perfection of hiſtorical compoſition which writers at laſt attain to after wandering through various imperfect modes, is a relation of intereſting facts, connected with their motives and conſequences. A hiſtory of that kind is truly a chain of cauſes and effects.

6 Eloquence. The hiſtory of Thucydides, and ſtill more that of Tacitus, are ſhining inſtances of that mode.

Eloquence was of a later date than the art of literary compoſition; for till the latter was improved there were no models for ſtudying the former. Cicero's oration for Roſcius is compoſed in a ſtyle diffuſe and highly ornamented; which, ſays Plutarch, was univerſally approved, becauſe at that time the ſtyle of Aſia, introduced into Rome with its luxury, was in high vogue. But Cicero, in a journey to Greece, where he leiſurely ſtudied Greek authors, was taught to prune off ſuperfluities, and to purify his ſtyle, which he did to a high degree of refinement. He introduced into his native tongue a ſweetneſs, a grace, a majeſty, that ſurpriſed the world, and even the Romans themſelves. Cicero obſerves with great regret, that if ambition for power had not drawn Julius Cæſar from the bar to command legions, he would have become the moſt complete orator in the world. So partial are men to the profeſſion in which they excel. Eloquence triumphs in a popular aſſembly; makes ſome figure in a court of law compoſed of many judges, very little where there is but a ſingle judge, and none at all in a deſpotic government. Eloquence flouriſhed in the republics of Athens and of Rome; and makes ſome figure at preſent in a Britiſh houſe of commons.

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The Greek ſtage has been juſtly admired among all polite nations. The tragedies of Sophocles and Euripides, in particular, are by all critics held to be perfect in their kind, excellent models for imitation, but far above rivalſhip. In the Greek ſtage was ſo early brought to maturity, it is a phenomenon not a little ſingular in the progreſs of arts. The Greek tragedy made a rapid progreſs from Theſpis to Sophocles and Euripides, whoſe compoſitions are wonderful productions of genius, conſidering that the Greeks at that period were but beginning to emerge from roughneſs and barbarity into a taſte for literature. The compoſitions of Eſchylus, Sophocles, and Euripides, muſt have been highly reliſhed among a people who had no idea of any thing more perfect. We judge by compariſon, and every work is held to be perfect that has no rival. It ought at the ſame time to be kept in view, that it was not the dialogue which chiefly enchanted the Athenians, nor variety in the paſſions repreſented, nor perfection in the actors; but machinery and pompous decoration, joined with exquiſite muſic. That theſe particulars were carried to the greateſt height, we may with certainty conclude from the extravagant ſums beſtowed on them: the exhibiting a ſingle tragedy was more expenſive to the Athenians than their fleet or their armies in any ſingle campaign.

One would imagine, however, that theſe compoſitions were too ſimple to enchant for ever: as variety in action, ſentiment, and paſſion, is requiſite, without which the ſtage will not continue long a favourite entertainment: and yet we find not a ſingle improvement attempted after the days of Sophocles and Euripides. The manner of performance, indeed, prevented abſolutely any improvement. A fluctuation of paſſion and refined ſentiments would have made no figure on the Grecian ſtage. Imagine the diſcording ſcene between Brutus and Caſſius in Julius Cæſar to be there exhibited, or the handkerchief in the Moor of Venice: how ſlight would be their effect, when pronounced in a maſk, and through a pipe? The workings of nature upon the countenance, and the flexions of voice expreſſive of various feelings, ſo deeply affecting in modern repreſentation, would have been entirely loſt. If a great genius had ariſen with talents for compoſing a pathetic tragedy in perfection, he would have made no figure in Greece. An edifice muſt have been erected of a moderate ſize: new actors muſt have been trained to act with a bare face, and to pronounce in their own voice. And after all, there remained a greater miracle ſtill to be performed, viz. a total reformation of taſte in the people of Athens. In one word, the ſimplicity of the Greek tragedy was ſuited to the manner of acting; and that manner excluded all improvements.

With reſpect to comedy, it does not appear that the Greek comedy ſurpaſſed the tragedy in its progreſs toward perfection. Horace mentions three ſtages of Greek comedy. The firſt well ſuited to the rough and coarſe manners of the Greeks, when Eupolis, Cratinus, and Ariſtophanes, wrote. Theſe authors were not aſhamed to repreſent on the ſtage real perſons, not even diſguiſing their names: of which we have a diverting inſtance in a comedy of Ariſtophanes, called *The Clouds*, where Socrates is introduced, and moſt con-

Comedy.

Arts. temptuouſly treated. This ſort of comedy, ſparing neither gods nor men, was reſtrained by the magiſtrates of Athens, ſo far as to prohibit perſons to be named on the ſtage. This led writers to do what is done at preſent: the characters and manners of known perſons were painted ſo much to the life, that there could be no miſtake; and the ſatire was indeed heightened by this regulation, as it was an additional pleaſure to find out the names that were meant in the repreſentation. This was termed the *middle comedy*. But as there ſtill remained too great ſcope for obloquy and licentiouſneſs, a law was made, prohibiting real events or incidents to be introduced upon the ſtage. This law happily baniſhed ſatire againſt individuals, and confined it to manners and cuſtoms in general. Obedient to this law are the comedies of Menander, Philemon, and Diphilus, who flouriſhed about 300 years before the Chriſtian era. And this is termed the *third* ſtage of Greek comedy. the comedies of Ariſtophanes which ſtill remain, err not leſs againſt taſte than againſt decency. But the Greek comedy is ſuppoſed to have been conſiderably refined by Menander and his cotemporaries. Their works, however, were far from perfection, if we can draw any conjecture from their imitator Plautus, who wrote about a century later. Plautus was a writer of genius; and it may be reaſonably ſuppoſed that his copies did not fall much ſhort of the originals, at leaſt in matters that can be faithfully copied; and he ſhows very little art, either in his compoſitions or in the conduct of his pieces. With reſpect to the former, his plots are wondrous ſimple, very little varied, and very little intereſting. The ſubject of almoſt every piece is a young man in love with a muſic girl, deſiring to purchaſe her from the procurer, and employing a favourite ſlave to cheat his father out of the price; and the different ways of accompliſhing the cheat is all the variety we find. In ſome few of his comedies the ſtory riſes to a higher tone, the muſic girl being diſcovered to be the daughter of a freeman, which removes every obſtruction of a marriage between her and her lover. In the conduct of his pieces there is a miſerable defect of art. Inſtead of unfolding the ſubject in the progreſs of the action, as is done by Terence, and by every modern writer, Plautus introduces a perſon for no other end but to explain the ſtory to the audience. In one of his comedies, a houſehold god is ſo obliging as not only to unfold the ſubject, but to relate beforehand every particular that is to be repreſented, not excepting the cataſtrophe.

The Roman theatre, from the time of Plautus to that of Terence, made a rapid progreſs. Ariſtotle defines comedy to be "an imitation of light and trivial ſubjects, provoking laughter." The comedies of Plautus correſpond accurately to that definition: thoſe of Terence riſe to a higher tone.

Nothing is more evident than the ſuperiority of Terence above Plautus in the art of writing; and, conſidering that Terence is a later writer, nothing would appear more natural, if they did not copy the ſame originals. It may be owing to genius that Terence excelled in purity of language and propriety of dialogue; but how account for his ſuperiority over Plautus in the conſtruction and conduct of a play? It will not certainly be thought, that Plautus would imitate the worſt conſtructed plays, leaving the beſt to thoſe who ſhould come after him. This difficulty does not ſeem to have occurred to any of the commentators. Had the works of Menander and of his cotemporaries been preſerved, they probably would have explained the myſtery; which for want of that light will probably remain a myſtery for ever. Arts.

Epopee. Homer has for more than 2000 years been held the prince of poets. Such perfection in an author who flouriſhed when arts were far ſhort of maturity, is truly wonderful. The nations engaged in the Trojan war are deſcribed by him as in a progreſs from the ſhepherd ſtate to that of agriculture. Frequent mention is made in the Iliad of the moſt eminent men being ſhepherds. Andromache, in particular, mentions ſeven of her brethren who were ſlain by Achilles as they tended their father's flocks and herds. In that ſtate, garments of woollen cloth were uſed; but the ſkins of beaſts, the original clothing, were ſtill worn as an upper garment; every chief in the Iliad appeared in that dreſs. Such indeed was the ſimplicity of this early period, that a black ewe was promiſed by each chief to the man who would undertake to be a ſpy. In times of ſuch ſimplicity, literature could not be far advanced; and it is a great doubt, whether there was at that time a ſingle poem of the epic kind for Homer to imitate or improve upon. Homer is undoubtedly a wonderful genius, perhaps the greateſt that ever exiſted: his fire, and the boldneſs of his conceptions, are inimitable. But in that early age, it would fall little ſhort of a real miracle, to find ſuch ripeneſs of judgment, and correctneſs of execution, as in modern writers are the fruits of long experience and progreſſive improvements during the courſe of many centuries. Accordingly, that Homer is far from being ſo ripe, or ſo correct, cannot eſcape the obſervation of any reader of taſte and diſcernment. One ſtriking particular is, his digreſſions without end, which draw our attention from the principal ſubject. Diomedes, for inſtance, meeting with Glaucus in the field of battle, and doubting from his majeſtic air, whether he might not be an immortal, inquires who he was, declaring that he would not fight with a god. Glaucus lays hold of this very ſlight opportunity, in the very heat of action, to give a long hiſtory of his family. In the mean time, the reader's patience is put to a trial, and his ardour cools. Again, Agamemnon deſiring advice how to reſiſt the Trojans, Diomedes ſprings forward; but before he offers advice, gives the hiſtory of all his progenitors, and of their characters, in a long train. And, after all, what was the ſage advice that required ſuch a preface? It was, that Agamemnon ſhould exhort the Greeks to fight bravely. At any rate, was Diomedes ſo little known, as to make it proper to ſuſpend the action at ſo critical a juncture, for a genealogical hiſtory? There is a third particular which juſtly merits cenſure; and that is, an endleſs number of minute circumſtances, eſpecially in the deſcription of battles, where they are moſt improper. The capital beauty of an epic poem is, the ſelection of ſuch incidents and circumſtances as make a deep impreſſion, keeping out of view every thing low or familiar. An account of a ſingle battle employs the whole fifth book of the Iliad and a great part of the ſixth: yet in the whole there is no general action; but unknown warriors, whom we never heard of before, killed at a diſtance with an arrow or a jave-

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lin; and every wound deſcribed with anatomical accuracy. The whole ſeventeenth book is employed in the conteſt about the dead body of Patroclus, ſtuffed with minute circumſtances, below the dignity of an epic poem. In ſuch ſcenes the reader is fatigued with endleſs particulars; and has nothing to ſupport him but the melody of Homer's verification.

10 Cauſes of the decline of the fine arts.

Having traced the progreſs of the fine arts toward maturity, in a ſummary way, the decline of thoſe arts comes next in order. An art, in its progreſs toward maturity, is greatly promoted by emulation; and, after arriving at maturity, its downfal is not leſs promoted by it. It is difficult to judge of perfection but by compariſon; and an artiſt, ambitious to outſtrip his predeceſſors, cannot ſubmit to be an imitator, but muſt ſtrive out ſomething new, which, in an art advanced to ripeneſs, ſeldom fails to be a degeneracy. This cauſe of the decline of the fine arts may be illuſtrated by various inſtances. The perfection of vocal muſic is to accompany paſſion, and to enforce ſentiment. In ancient Greece, the province of muſic was well underſtood; which being confined within its proper ſphere, had an enchanting influence. Harmony at that time was very little cultivated, becauſe it was of very little uſe: melody reaches the heart, and it is by it chiefly that a ſentiment is enforced, or a paſſion ſoothed; harmony, on the contrary, reaches the ear only; and it is a matter of undoubted experience, that the moſt melodious airs admit but of very ſimple harmony. Artiſts, in later times, ignorant why harmony was ſo little regarded by the ancients, applied themſelves ſeriouſly to its cultivation; and they have been wonderfully ſucceſsful. But they have been ſucceſsful at the expence of melody; which in modern compoſitions, generally ſpeaking, is loſt amid the blaze of harmony. Theſe compoſitions tickle the ear by the luxury of complicated ſounds, but ſeldom make any impreſſion on the heart. The Italian opera, in its form, reſembles the Greek tragedy, from which it is evidently copied; but very little in ſubſtance. In the latter, muſic being made ſubſervient to ſentiment, the dialogue is nervous and ſublime: in the former, the whole weight is laid on muſic; and the dialogue, devoid of ſentiment, is weak and ſpiritleſs. Reſtleſs man knows no golden mean, but will be attempting innovations without end. By the ſame ambition, architecture has viſibly declined from its perfection. The Ionic was the favourite order when architecture was in its height of glory. The Corinthian order came next; which, in attempting greater perfection, has deviated from the true ſimplicity of nature: and the deviation is ſtill greater in the Compoſite order. With reſpect to literary productions, the firſt eſſays of the Romans were very imperfect. We may judge of this from Plautus, whoſe compoſitions are abundantly rude, though much admired by his cotemporaries, being the beſt that exiſted at that time. The exalted ſpirit of the Romans hurried them on to the grand and beautiful; and literary productions of all kinds were in perfection when Auguſtus reigned. In attempting ſtill greater perfection, the Roman compoſitions became a ſtrange jumble of inconſiſtent parts: they were tumid and pompous; and, at the ſame time, full of antitheſes, conceit, and tinſel wit. Every thing new in the fine arts pleaſes, though leſs perfect than what we are accuſtomed to; and, for that reaſon, ſuch compoſitions were generally reliſhed. We [illegible] the time of Auguſtus, [illegible] that were before them, for no book of [illegible] that time is preferred to [illegible] in whole works [illegible] artificial thought and [illegible] wit. He was a great corrupter of the Roman taſte; and [illegible] was reliſhed but brilliant ſtrokes of [illegible] little regard to [illegible] Virgil and Cicero made no figure in compariſon. [illegible] elevation of thought and ſtyle very difficult to be ſupported; and, accordingly, he ſinks often into puerile reflection; winds his encomium on the river Po; which, ſays he, would equal the Danube, had it the ſame number of tributary ſtreams. Quintilian, a writer of true and claſſical taſte, who was protected and encouraged by Veſpaſian, attempted to ſtem the tide of falſe writing. His rhetoric is compoſed in an elegant ſtyle; and his obſervations contain every delicacy of the critical art. At the ſame time flouriſhed Tacitus, poſſeſſing a more extenſive knowledge of the nature of man than any other author, ancient or modern, if Shakeſpeare be not excepted. His ſtyle is original, conciſe, compact, and comprehenſive; and, in what is properly called his *hiſtory*, perfectly correct and beautiful. He has been imitated by ſeveral, but never equalled by any. Brutus is ſaid to be the laſt of the Romans for love of liberty: Quintilian and Tacitus may be ſaid to be the laſt of the Romans for literary genius. Pliny the younger is no exception; his ſtyle is affected, turgid, and full of childiſh brilliancy. Seneca and Pliny are proper examples of writers who ſtudy ſhow more than ſubſtance, and who make ſenſe yield to ſound. The difference between theſe authors and thoſe of the Auguſtan age, reſembles the difference between Greek and Italian muſic. Muſic, among the Greeks, limited itſelf to the employment to which it is deſtined by nature, viz. to be the handmaid of ſenſe, to enforce, enliven, or ſweeten a ſentiment. In the Italian opera, the miſtreſs is degraded to be handmaid; and harmony triumphs, with very little regard to ſentiment.

Another great cauſe that precipitates the downfal of every fine art is deſpotiſm. The reaſon is obvious; and there is a diſmal example of it in Rome, particularly with regard to eloquence. We learn from a dialogue accounting for the corruption of the Roman eloquence, that in the decline of the art it became faſhionable to ſtuff harangues with impertinent poetical quotations, without any view but ornament merely; and this alſo was long faſhionable in France. It happened unluckily for the Romans, and for the world, that the fine arts were at their height in Rome, and not much upon the decline in Greece, when deſpotiſm put an end to the republic. Auguſtus, it is true, retarded their fall, particularly that of literature; it being the policy of his reign to hide deſpotiſm, and to give his government an air of freedom. His court was a ſchool of urbanity, where people of genius acquired that delicacy of taſte, that elevation of ſentiment, and that purity of expreſſion, which characterize the writers of his time. He honoured men of learning, admitted them to his table, and was bountiful to them. It would be painful to follow the decline of the fine arts in Rome to their

Arts. their total extirpation. The tyranny of Tiberius, and of ſubſequent emperors, broke at laſt the elevated and independent ſpirit of the brave Romans, reduced them to abject ſlavery, and left not a ſpark of genius. The ſcience of law is the only exception, as it flouriſhed even in the worſt of times: the Roman lawyers were a reſpectable body, and leſs the object of jealouſy than men of power and extenſive landed property. Among the Greeks alſo, a conquered people, the fine arts decayed; but not ſo rapidly as at Rome: the Greeks, farther removed from the ſeat of government, being leſs within the reach of a Roman tyrant. During their depreſſion, they were guilty of the moſt puerile conceits: witneſs verſes compoſed in the form of an axe, an egg, wings, and ſuch like. The ſtyle of Greek authors, in the reign of the emperor Adrian, is unequal, obſcure, ſtiff, and affected. Lucian is the only exception that may be made.

We ſcarcely need any other cauſe but deſpotiſm, to account for the decline of ſtatuary and painting in Greece. Theſe arts had arrived at their utmoſt perfection about the time of Alexander the Great; and from that time they declined gradually with the vigour of a free people; for Greece was now enſlaved by the Macedonian power. It may in general be obſerved, that when a nation becomes ſtationary in that degree of power which it acquires from its conſtitution and ſituation, the national ſpirit ſubſides, and men of talents become rare. It is ſtill worſe with a nation that is ſunk below its former power and pre-eminence; and worſt of all when it is reduced to ſlavery. Other cauſes concurred to accelerate the downfal of the arts mentioned. Greece, in the days of Alexander, was filled with ſtatues of excellent workmanſhip; and there being little demand for more, the later ſtatuaries were reduced to heads and buſts. At laſt the Romans put a total end both to ſtatuary and painting in Greece, by plundering it of its fineſt pieces; and the Greeks, expoſed to the avarice of the conquerors, beſtowed no longer any money on the fine arts.

* Petronius Arbiter.

The decline of the fine arts in Rome is by a * writer of taſte and elegance aſcribed to a cauſe different from any above mentioned, a cauſe that overwhelms manhood as well as the fine arts wherever it prevails; and that is opulence, joined with its faithful attendants avarice and luxury. "In ancient times (ſays he), when naked virtue had her admirers, the liberal arts were in their higheſt vigour; and there was a generous conteſt among men, that nothing of real and permanent advantage ſhould long remain undiſcovered. Democritus extracted the juice of every herb and plant; and, leſt the virtue of a ſingle ſtone or twig ſhould eſcape him, he conſumed a lifetime in experiments. Eudoxus, immerſed in the ſtudy of aſtronomy, ſpent his age upon the top of a mountain. Chryſippus, to ſtimulate his inventive faculty, thrice purified his genius with hellebore. To turn to the imitative arts; Lyſippus, while labouring on the form of a ſingle ſtatue, periſhed from want. Myron, whoſe powerful hand gave to the brafs almoſt the ſoul of man and animals,—at his death found not an heir? Of us of modern times what ſhall we ſay? Immerſed in drunkenneſs and debauchery, we want the ſpirit to cultivate thoſe arts which we poſſeſs. We inveigh againſt the manners of antiquity; we ſtudy vice alone; and vice is all we teach. Where now is the art of reaſoning? Where aſtronomy? What man now-a-days is heard in our temples to make a vow for the attainment of eloquence, or for the diſcovery of the fountain of true philoſophy? Nor do we even pray for health of body, or a ſound underſtanding. One, while he has ſcarce entered the porch of the temple, devotes a gift in the event of the death of a rich relation; another prays for the diſcovery of a treaſure; a third for a miniſterial fortune. The ſenate itſelf, the exemplary preceptor of what is good and laudable, has promiſed a thouſand pounds of gold to the capitol; and, to remove all reproach from the crime of avarice, has offered a bribe to Jupiter himſelf. How ſhould we wonder that the art of painting has declined, when, in the eyes both of the gods and men, there is more beauty in a maſs of gold than in all the works of Phidias and Apelles."—In England, the fine arts are far from ſuch perfection as to ſuffer by opulence. They are in a progreſs, it is true, toward maturity; but they proceed in a very ſlow pace.

There is ſtill another cauſe that never fails to undermine a fine art in a country where it is brought to perfection, abſtracting from every one of the cauſes above mentioned. It is remarked a little above, that nothing is more fatal to an art or to a ſcience than a performance ſo much ſuperior to all of the kind as to extinguiſh emulation. This remark is exemplified in the great Newton, who having ſurpaſſed all the ancients, has not left to his countrymen even the faineſt hope of rivalling him; and to that cauſe is attributed the viſible decline of mathematics in Great Britain. The ſame cauſe would have been fatal to the arts of ſtatuary and painting among the Greeks, even though they had continued a free people. The decay of painting in modern Italy is, probably, owing to the ſame cauſe: Michael Angelo, Raphael, Titian, &c. are lofty oaks that bear down young plants in their neighbourhood, and intercept from them the ſunſhine of emulation. Had the art of painting made a flower progreſs in Italy, it might have there continued in vigour to this day. Velleius Paterculus ſays judiciouſly, "Ut primo ad conſequendos quos priores ducimus accendimur; ita, ubi aut præteriri aut æquari eos poſſe deſperavimus, ſtudium cum ſpe ſenelcit; et quod adſequi non poteſt, ſequi deſinit: præteritoque eo in quo eminere non poſſimus, aliquid in quo nitamur conquirimus."

The decline of an art or ſcience proceeding from the foregoing cauſe, is the moſt rapid where a ſtrict compariſon can be inſtituted between the works of different maſters. The ſuperiority of Newton above every other mathematician can be aſcertained with preciſion; and hence the ſudden decline of that ſcience in Great Britain. In Italy a talent for painting continued many years in vigour, becauſe no painter appeared with ſuch ſuperiority of genius as to carry perfection in every branch of the art. As one ſurpaſſed in deſigning, one in colouring, one in graceful attitudes, there was ſtill ſcope for emulation. But when at laſt there was not a ſingle perfection but what one or other maſter had excelled in, from that period the art began to languiſh. Architecture continued longer in vigour than painting, becauſe the principles of compariſon in the former are leſs preciſe than in the latter. The artiſt

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who could not rival his predeceſſors in an eſtabliſhed mode, fought out a new mode for himſelf, which, though perhaps leſs elegant or perfect, was for a time ſupported by novelty.

11 Uſeful arts leſs ſubject to decline.

Uſeful arts will never be neglected in a country where there is any police; for every man finds his account in them. Fine arts are more precarious. They are not reliſhed but by perſons of taſte, who are rare; and ſuch as can ſpare great ſums for ſupporting them are ſtill more rare. For that reaſon, they will never flouriſh in any country, unleſs patronized by the ſovereign, or by men of power and opulence. They merit ſuch patronage, as one of the ſprings of government: and a capital ſpring they make, by multiplying amuſements, and humanizing manners; upon which account they have always been encouraged by good princes.

12 THEORY of the polite arts.

General Theory of the Polite ARTS. The eſſence of the polite arts, as before obſerved, conſiſts in *expreſſion*. The end of all theſe arts is *pleaſure*; whereas the end of the ſciences is *inſtruction* and *utility*. Some of the polite arts indeed, as eloquence, poetry, and architecture, are frequently applied to objects that are uſeful, or exerciſed in matters that are inſtructive, as we ſhall ſhow more particularly in their proper place; but in theſe caſes, though the ground-work belongs to thoſe ſciences which employ the underſtanding, yet the expreſſion ariſes from the inventive faculty. It is a picture that is deſigned by Minerva, to which the Muſes add the colouring, and the Graces the frame. This union forms therefore the perfection of the art, according to that ſententious and well known precept of Horace:

Omne tulit punctum, qui miſcuit utile dulci.

13 What arts ſo denominated.

Under the denomination therefore, of Polite Arts, we comprehend, 1. Eloquence; 2. Poetry; 3. Muſic; 4. Painting; 5. Sculpture; 6. Graving; 7. Architecture; 8. Declamation; 9. Dancing. Particular deſcriptions of theſe arts are given under their reſpective names. This branch of the preſent article is intended as a general introduction to them; and, as ſuch, will be occaſionally referred to.

There is one very eſſential reflection, which it appears to us proper to make in the firſt place, on the polite arts in general. All the rules in the world are not ſufficient to make a great poet, an able orator, or an excellent artiſt; becauſe the quality, neceſſary to form theſe, depends on the natural diſpoſition, the fire of genius, which no human art can confer, but which is the pure gift of heaven. The rules, however, will prevent a man from being a bad artiſt, a dull orator, or a wretched poet; ſeeing they are the reflections of the greateſt maſters in thoſe arts, and that they point out the rocks which the artiſt ſhould ſhun in the exerciſe of his talents. They are of uſe moreover, in facilitating his labours, and in directing him to arrive by the ſhorteſt and ſureſt road at perfection. They refine, ſtrengthen, and confirm his taſte. Nature, abandoned to herſelf, has ſomething conſtantly wild and ſavage. Art, founded on juſt and ſagacious rules, gives her elegance, dignity, and politeneſs; and it is impoſſible to ſacrifice properly to the Graces, without knowing the incenſe that is pleaſing to them.

14 Uſe of precepts.

Beauty is the object of all the polite arts. It is not however, ſo eaſy, as it may ſeem, to give a clear and determinate idea of what we precisely mean by that term*. Many able writers, who have treated expreſsly on the ſubject, have ſhown that they were totally ignorant of what it was. It is one of theſe expreſſions that we comprehend immediately, that preſents us with a clear and preciſe idea, that leave a diſtinct impreſſion on our minds, when it is ſimply written or pronounced; but which philoſophers envelope in darkneſs, when they attempt to elucidate it by definitions and deſcriptions; and the more, as mankind have different ideas of beauty, their opinions and taſtes being as various as their underſtandings and phyſiognomies. We may ſay, however, in general, that beauty reſults from the various perfections of which any object is ſuſceptible, and which it actually poſſeſſes; and that the perfections which produce beauty conſiſt principally in the agreeable and delightful proportions which are found, 1. Between the ſeveral parts of the ſame object; 2. Between each part and the whole together; 3. Between the parts and the end or deſign of the object to which they belong. *Genius*, or invention, is that faculty of the mind by which *beauty* is produced. *Taſte* †, diſpoſition, or rather the natural ſenſation of the mind refined by art, ſerves to guide the genius in diſcerning, embracing, and producing, that which is beautiful of every kind. From whence it follows, that the general theory of the polite arts is nothing more than the knowledge of what they contain that is truly beautiful and agreeable; and it is this knowledge, this theory, which modern philoſophers call by the Latin name of *æſthetica*.

Art.

1 Preſent ſtate, and what.

* See the next Article.

† See *Taſte*.

It ſhould be conſtantly remembered, that the eſſence of the polite arts conſiſts in expreſſion. This expreſſion lies ſometimes in the words, and ſometimes in the pen; ſometimes in ſounds and their harmony, and at others in corporeal attitudes; ſometimes in the pencil or in the chiſel, and at others in the graver; ſometimes in a proper diſpoſition or judicious employment of the mechanic arts, and at others merely in their manner of acting. From whence ariſe thoſe arts that we have mentioned, and which are deſcribed in their order.

16 Firſt general rule.

The general theory of the polite arts, or *æſthetics*, neceſſarily ſuppoſes, therefore, certain rules; but theſe general rules are of no great number. The firſt is, That whoever would devote himſelf to the polite arts, ſhould above all things *conſult his genius*; diveſt himſelf of ſelf love; and examine if he be a tranſlation of Apollo, and cheriſhed by the Muſes: for

> In vain, raſh author, doſt thou ſtrive to climb,
> By lofty verſe, Parnaſſus' height ſublime,
> If heaven does not by ſecret powers inſpire,
> Or if thy natal ſtar darts not poetic fire.

This precept with regard to poetry in particular, is applicable to all the polite arts in general; for their moſt happy ſucceſs is founded on *imagination*. By this term we underſtand, in general, a faculty of the mind, a particular genius, a lively invention, a certain ſubtle ſpirit, which gives a facility in diſcovering ſomething new. But it is neceſſary alſo to preſcribe juſt bounds to this term *new*, which muſt not be here taken in an abſolute ſenſe. Solomon wiſely remarks, that, even in his time, *there was nothing new under the ſun*.

17 Imagination what.

1 Novelty.

Arts. *the ſun.* In fact, all that exiſts, and all that is capable of being diſcovered in the known world, has already been diſcovered. The fine arts in their imitations of nature, in their expreſſions, can borrow images, figures, compariſons, from thoſe things only that exiſt and are known. As there have been from the beginning of the world to our days, millions of authors in each of the polite arts, almoſt all the poſſible combinations of the various ſubjects have been produced by their lively imaginations; and when we hear the ignorant part of mankind talk of a work of wit or of art *that is entirely new*, that offers ideas which were before utterly unknown, that had never entered into the brain of any other man, we ſhould refer ſuch aſſertions to the claſs of popular errors: and reflect on thoſe ſtories we every day hear of certain empirics, who pretend to be alone poſſeſſed of marvellous methods of cure by means of ſimples; as if there were any plant, any ſtalk of graſs that grows in our world, that can have eſcaped the reſearches of botaniſts. But the novelty, of which we here ſpeak, conſiſts in the ingenious uſe of combinations of all the various objects of nature, that are new, happy, and agreeable, that have not yet been exhauſted, and which appear even to be inexhauſtible; and of the uſe which the artiſt makes of all new diſcoveries, which he turns to his advantage, by a judicious application. Invention therefore ſuppoſes a conſiderable fund of preliminary knowledge, ſuch as is capable of furniſhing ideas and images, to form new combinations. But there is no art by which invention itſelf can be produced; for that, as we have already ſaid, is the gift of heaven; and it is an endowment which we cannot even make uſe of whenever we pleaſe. We would rather ſay, therefore, that invention conſiſts in producing, in works of genius, *that which is unexpected*; an object, a harmony, a perfection, a thought, an expreſſion of which we had no idea, that we could not foreſee, nor hope to find, where the artiſt has ſo happily placed it, and where we perceive it with delight. This idea appears applicable to ſuch of the polite arts as affect the mind by the hearing as well as by the ſight; and it is a matter that is highly eſſential.

19 2d Rule, Improvement of taſte.

The ſecond rule is, That every artiſt ought inceſſantly to labour in the improvement of his *taſte*; in acquiring that ſenſible, refined, and clear diſcernment, by which he will be enabled to diſtinguiſh the real beauties in each object, the ornaments that are agreeable to it, and the proportions and relations that ſubſiſt among the ſeveral parts: and by this faculty, he will be regulated in the employment of his natural talents. This labour conſiſts not only in the profound reflections he will make on the properties of objects, as they relate to the fine arts, but alſo in a conſtant, aſſiduous ſtudy of the grand models of beauty.

20 3d, Imitation of nature.

The third rule to be obſerved in the practice of the polite arts, is *the imitation of nature.* Every object in the univerſe has its peculiar nature, of which the artiſt ſhould never loſe ſight in his manner of treating it. In vain will he otherwiſe ornament his work with the moſt refined and moſt brilliant ſtrokes; for, if nature be not juſtly imitated, it will for ever remain imperfect. The ſublime Homer has ſometimes ſinned againſt this rule: for, as the gods have a nature peculiar to themſelves, it cannot be a juſt imitation when we attribute to them paſſions that are ſcarce pardonable in mortals, and make them frequently converſe in a language that is at once vulgar and ridiculous. It was not to imitate nature, to put in the mouth of a hero, at the moment of a deciſive battle, an harangue that muſt become tedious by its exceſſive length, and which certainly could not have been heard by the thouſandth part of a numerous army: but we have already touched upon ſome of the faults that are ſtrewed over the poems of that great man; to multiply or dwell upon them would be ungrateful. We muſt, however, obſerve that this imitation of nature, which appears at firſt view ſo ſimple and ſo eaſy, is of all things the moſt difficult in practice; and that it requires a diſcernment ſo ſagacious, and an expreſſion ſo happy, as is rarely beſtowed by heaven on mortal man. Arts.

21 4th, Perſpicuity.

Perſpicuity forms the fourth rule of expreſſion. In all the fine arts, in general, an obſcure, perplexed, ambiguous, and elaborate expreſſion, is always bad. The true ſtriking beauty muſt be manifeſt and perceptible to the moſt ignorant of mankind as well as the moſt learned. Thoſe are ever falſe or inferior beauties that have occaſion for a covering, a kind of veil that may make them appear greater than they really are: true beauty wants no veil, but ſhines by its native luſtre. From the union of the true imitation of nature with perſpicuity of expreſſion ariſes that *truth* which is ſo eſſential in the productions of the fine arts.

22 5th, Elevation of ſentiment.

In all the polite arts, and in all the ſubjects they embrace, there muſt neceſſarily reign an elevation of ſentiment, that expreſſes each object in the greateſt perfection of which it is ſuſceptible; that imitates nature in her moſt exalted beauty. This makes the fifth general rule. The deſign of the fine arts being to excite pleaſure by the expreſſion of that which is beautiful, every artiſt ſhould raiſe himſelf above his ſubject; and, chooſing the moſt favourable light wherein to place it, ſhould there embelliſh it with the greateſt, moſt noble, and beautiful ornaments, that his own genius can ſuggeſt; ſtill, however, obſerving a ſtrict imitation of nature.

23 6th, The ſublime to be endeavoured after.

From the obſervation of theſe two laſt rules reſults the *ſublime*, which is the union of the greateſt perſpicuity with the ſtricteſt truth and moſt exalted elevation poſſible. It is neceſſary to remark here, that the moſt ſimple and common ſubjects are ſuſceptible of a ſublime that is agreeable to their nature. An idyl or landſcape may be as ſublime in their kinds as an epic poem or a hiſtory piece. When Moſes begins the book of Geneſis, with theſe words, *In the beginning God created the heaven and the earth*; or when he tells us, that God ſaid, *Let there be light, and there was light*; theſe expreſſions are ſublime in the higheſt degree, becauſe they are perfectly clear, true, and elevated. Every author ſhould therefore endeavour after the ſublime* in every ſubject that he undertakes; and this makes the ſixth and laſt general rule in the practice of the polite arts. But if he cannot attain to this, it is, however, indiſpenſably neceſſary that he conſtantly make uſe of expreſſions that are *noble and refined.* Every thing that is *low*, *indecent* or *diſagreeable*, is naturally repugnant to the ſublime, and ought to be for ever baniſhed from all works that proceed from the noble and liberal arts.

* See the article GRANDEUR *and Sublimity.*

ART

Art II Artaxata.

ART is also an appellation given to several superstitious practices, as, *St Anselm's art*, *St Paul's art*, &c.

Art and Part, in *Scots Law*. See ACCESSORY.

ARTA, by some called *Larta*, a town of Lower Albania, in Turkey in Europe, with a Greek archbishop's see. It is a pretty large town, and contains about 7000 or 8000 inhabitants, Greeks and Turks; but the former are the most numerous. The cathedral has as many windows and doors as there are days in the year. It is supported by above 2000 marble pillars; and was built by Michael Ducas Comneno emperor of Constantinople, as appears by an inscription over the great door. It carries on a considerable trade, particularly in tobacco and furs. E. Long. 31. 30. N. Lat. 39. 28.

ARTABA, an ancient measure of capacity used by the Persians, Medes, and Egyptians.

The Persian artaba is represented by Herodotus as bigger than the Attic medimnus by three Attic chœnixes: from which it appears that it was equal to $6\frac{2}{3}$ Roman modii; consequently that it contained $166\frac{2}{3}$ pounds of wine or water, or $126\frac{2}{3}$ pounds of wheat. The Egyptian artaba contained five Roman modii, and fell short of the Attic medimnus by one modius; consequently held $133\frac{1}{3}$ pounds of water or wine, 100 pounds of wheat, or 60 of flour.

ARTABANUS, the name of several kings of Parthia. See PARTHIA.

ARTABAZUS, the son of Pharnaces, commanded the Parthians and Chorasmians in the famous expedition of Xerxes. After the battle of Salamis, he escorted the king his master to the Hellespont with 60,000 chosen men; and after the battle of Platæa, in which Mardonius engaged contrary to his advice, he made a noble retreat, and returned to Asia with 40,000 men under his command.

ARTAXATA, the royal residence and metropolis of Armenia Major (Strabo, Pliny, Juvenal), and built according to a plan of Hannibal, for King Artaxias, after whom it was called. It was situated on an elbow of the river Araxes, which formed a kind of peninsula, and surrounded the town like a wall, except on the side of the isthmus, but this side was secured by a rampart and ditch. This town was deemed so strong, that Lucullus, after having defeated Tigranes, durst not lay siege to it; but Pompey compelled him to deliver it up without striking a blow. It was then levelled with the ground; but the Armenians have a tradition, that the ruins of it are still to be seen at a place called *Ardachat*. Sir John Chardin says, that it has the name of *Ardachat* from Artaxias, whom in the East they call *Ardechier*. Here are the remains of a stately palace which the Armenians take to be that of Tiridates who reigned in the time of Constantine the Great. One front of this building is but half ruined, and there are many other fine antiquities which the inhabitants call *Tact Tradat*, that is, the throne of Tiridates. Tavernier also mentions the ruins of Artaxata between Erivan and Mount Ararat, but does not specify them. The ancient geographers mention another city of the same name, likewise situated on the Araxes, but in the northern part of Media, known among the ancients by the name of *Acropatia*.

ARTAXERXES, the name of several kings of Persia. See PERSIA.

ARTEDI, PETER, an eminent naturalist, was born in Sweden in the year 1705, in the province of Angermania. Although his parents were poor, yet it appears they found means to give him a liberal education, and with this view they sent him to the college of Hurneland. Intending to embrace the ecclesiastical profession, he went in 1724 to Upsal; but being fond of the study of natural history, he yielded to the bent of inclination, and directed his attention towards medicine. In natural history he made rapid progress, and soon arose to considerable eminence, particularly in the knowledge of *Ichthyology*. His reputation for natural knowledge was high when Linnæus arrived at Upsal in the year 1728. A lasting friendship was formed between these two great men. Confining his botanical studies to the umbelliferous plants, he suggested a new mode of classification; but Artedi was much better acquainted with chemistry than botany. His attention was chiefly directed to ichthyology, the classification of which he greatly reformed, and new-modelled upon philosophical principles. This arrangement added greatly to his reputation as a naturalist. When the two friends were about to leave Upsal, Linnæus to go to Lapland, and Artedi to England, they reciprocally bequeathed to each other their manuscripts and books upon the event of death. In the year 1735, they, however, met again at Leyden, where Artedi was introduced to Seba, and employed in preparing for the press the third volume of that eminent naturalist's *Thesaurus*, which chiefly related to fishes. Artedi formed the resolution, as soon as that work was finished, to return to his native country, to publish the fruits of his own labours; but unfortunately as he was returning home from Seba's house on the evening of September 27. 1735, the night being dark, he fell into the canal and was drowned. According to agreement, his manuscripts came into the hands of Linnæus, and he published his *Bibliotheca Ichthyologica*, and *Philosophia Ichthyologica*, together with a life of the author, at Leyden in the year 1738. (*Gen. Biog.*)

ARTEDIA. See BOTANY *Index*.

ARTEMIDORUS, famous for his Treatise on Dreams. He was born at Ephesus, but took upon him the surname of *Daldianus* in this book, by way of respect to his mother country Daltis. He styled himself *the Ephesian* in his other performances. He not only bought up all that had been written concerning the explication of dreams, which amounted to many volumes; but he likewise spent many years in travelling, in order to contract an acquaintance with fortune-tellers; he also carried on an extensive correspondence with all the people of this sort in the cities and assemblies of Greece, Italy, and the most populous islands; collecting at the same time all the old dreams, and the events which are said to have followed them. The work which he wrote on dreams consisted of five books: the first three were dedicated to one Cassius Maximus; and the last two to his son, whom he took a good deal of pains to instruct in the nature and interpretation of dreams. This work, though filled with frivolous observations, contains some things that are interesting. It was first printed in Greek at Venice in 1518; and Rigaltius published an edition at Paris, in

Artemifia, Artemidorus.

Greek and Latin, in 1603, and added ſome notes. Artemidorus wrote alſo a treatiſe upon Auguries, and another upon Chiromancy; but they are not extant. He lived under the emperor Antoninus Pius.

ARTEMISIA, wife of Mauſolus, king of Caria, has immortalized herſelf by the honours which ſhe paid to the memory of her huſband. She built for him in Halicarnaſſus, a very magnificent tomb, called the *Mauſoleum*, which was one of the ſeven wonders of the world, and from which the title of *Mauſoleum* was afterwards given to all tombs remarkable for their grandeur; but ſhe died of regret and ſorrow before the Mauſoleum was finiſhed. She appointed panegyrics to be made in honour of him, and propoſed a prize of great value for the perſon who ſhould compoſe the beſt. He died about the end of the 106th Olympiad, 351 years before the Chriſtian era.

ARTEMISIA, queen of Caria, and the daughter of Lygdamis, marched in perſon in the expedition of Xerxes againſt the Greeks, and performed wonders in the ſea-fight near Salamis, 480 years before the Chriſtian era. Being purſued by an Athenian veſſel, ſhe attacked one of the Perſian ſhips, commanded by Demaſithymus, king of Calyndus, her enemy, and ſunk it; on which the Athenians, thinking that her ſhip was on the ſide of the Greeks, ceaſed their purſuit; but Xerxes was the principal perſon impoſed upon in this affair; for believing ſhe had ſunk an Athenian veſſel, he declared, that "the men had behaved like women, and the women like men." Xerxes intruſted her with the care of the young princes of Perſia, his ſons, when, agreeably to her advice, he abandoned Greece, in order to return to Aſia. Theſe great qualities did not ſecure her from the weakneſs of love: ſhe was paſſionately fond of a man of Abydos, whoſe name was Dardanus, and was ſo enraged at his neglect of her, that ſhe put out his eyes while he was aſleep. The gods in order to puniſh her for this, inſpired her with a ſtill ſtronger paſſion for him; ſo that the oracle having adviſed her to go to Leucas, which was the uſage of deſperate lovers, ſhe took the leap from thence, and was interred at that place.—Many writers confound this Artemiſia with the former, the wife of Mauſolus.

ARTEMISIA, *Mugwort*, *Southernwood*, and *Wormwood*. See BOTANY *Index*.

ARTEMISIUM, in *Ancient Geography*, a promontory on the north-eaſt of Eubœa, (called *Leon* and *Cale Acte* by Ptolemy), memorable for the firſt ſea engagements between the Greeks and Xerxes.

The Grecian fleet was ſtationed in the harbour; while that of the Perſians, too numerous for any harbour to contain, had anchored in the road that extends between the city of Caſtanæa and the promontory of Sepias, on the coaſt of Theſſaly.

The firſt line of their fleet was ſheltered by the coaſt of Theſſaly; but the other lines, to the number of ſeven, rode at anchor, at ſmall intervals, with the prows of the veſſels turned to the ſea. When they adopted this arrangement, the waters were ſmooth, the ſky clear, the weather calm and ſerene: but on the morning of the ſecond day after their arrival on the coaſt, the ſky began to lower; the appearance of the heavens grew threatening, and terrible; a dreadful ſtorm ſucceeded, and for three days raged with unabating fury. Four hundred galleys were deſtroyed by its violence, beſides a vaſt number of ſtoreſhips and tranſports. Eight hundred ſhips of war, however, beſides innumerable veſſels of burden, ſailed into the Pegaſean bay, and anchored in the road of Apheté, which, at the diſtance of a few miles, lies directly oppoſite to the harbour of Artemiſium. Artemiſium.

The Grecians had poſted centinels on the heights of Eubœa to obſerve the conſequence of the ſtorm, and to watch the motions of the enemy. When informed of the diſaſter which had befallen them, they poured out a joyous libation, and ſacrificed with pious gratitude, to "Neptune the Deliverer." From *Gillies's Hiſtory of Greece.*

The Perſians, however, having recovered from the terrors of the ſtorm, prepared for battle; and as they entertained not the ſmalleſt doubt of conquering, they detached 200 of their beſt ſailing veſſels round the iſle of Eubœa, to intercept the expected flight of the enemy through the narrow Euripus.

About ſunſet the Grecian fleet approached in a line; and the Perſians met them with the confidence of victory; as their ſhips were ſtill ſufficiently numerous to ſurround thoſe of their opponents. At the firſt ſignal the Greeks formed into a circle, at the ſecond they began the fight. Though crowded into a narrow compaſs, and having the enemy on every ſide, they ſoon took 30 of their ſhips, and ſunk many more. Night came on, accompanied with an impetuous ſtorm of rain and thunder; the Greeks retired into the harbour of Artemiſium; the enemy were driven to the coaſt of Theſſaly.

By good fortune, however, rather than by deſign, the greateſt part of the Perſian fleet eſcaped immediate deſtruction, and gained the Pegaſean bay; but the ſhips ordered to ſail round Eubœa met with a more dreadful diſaſter. They were overtaken by the ſtorm, after they had adventured further from the ſhore than was uſual with the wary mariners of antiquity. Clouds ſoon intercepted the ſtars, by which alone they directed their courſe; and after continuing during the greateſt part of the night the ſport of the elements, they all periſhed miſerably amidſt the ſhoals and rocks of an unknown coaſt.

The morning aroſe with different proſpects and hopes to the Perſians and the Greeks. To the former it diſcovered the extent of their misfortunes; to the latter it brought a reinforcement of 53 Athenian ſhips. Encouraged by this favourable circumſtance, they determined again to attack the enemy, at the ſame hour as on the preceding day, becauſe their knowledge of the coaſt and their ſkill in fighting their ſhips rendered the duſk peculiarly propitious to their deſigns. At the appointed time, they ſailed towards the road of Apheté; and having cut off the Cicilian ſquadron from the reſt, totally deſtroyed it, and returned at night to Artemiſium.—The Perſian commanders being deeply affected with their repeated diſaſters, but ſtill more alarmed at the much-dreaded reſentment of their king, they determined to make one vigorous effort for retrieving the glory of their arms. By art and ſtratagem, and under favour of the night, the Greeks had hitherto gained many important advantages. It now belonged to the Perſians to chooſe the time for action. On the third day at noon, they ſailed forth in the form of a creſcent, which was ſtill ſufficiently

Artemisium || Arthur.

ficiently extenſive to infold the Grecian line. The Greeks, animated by former ſucceſs, were averſe to decline any offer of battle; yet it is probable that their admirals, and particularly Themiſtocles, would much rather have delayed it to a more favourable opportunity. Rage, reſentment, and indignation, ſupplied the defect of the barbarians in ſkill and courage. The battle was longer, and more doubtful, than on any former occaſion; many Grecian veſſels were deſtroyed, five were taken by the Egyptians, who particularly ſignalized themſelves on the ſide of the barbarians, as the Athenians did on that of the Greeks. The perſevering valour of the latter at length prevailed, the enemy retiring, and acknowledging their ſuperiority, by leaving them in poſſeſſion of the dead and the wreck. But the victory coſt them dear; ſince their veſſels, particularly thoſe of the Athenians, were reduced to a very ſhattered condition; and their great inferiority in the number and ſize of their ſhips, made them feel more ſenſibly every diminution of ſtrength.

ARTEMISIUM, a town of Oenotria, (Stephanus): now *S. Agatha*, in the Hither Calabria, on the river Pilaurus, or la Foglia, diſtant eight miles from the Tuſcan ſea.—Another of the Conteſtani, in Spain, (Strabo); otherwiſe called *Dianium*: now *Denia*, on the ſea coaſt of Valencia.

ARTERIOTOMY, the opening an artery, with deſign to procure an evacuation of blood. See SURGERY.

ARTERY, in *Anatomy*, a conical tube or canal which conveys the blood from the heart to all parts of the body. See ANATOMY.

ARTHRITIS, in *Medicine*, the GOUT. See the *Index* ſubjoined to MEDICINE.

ARTHRODIA, in *Natural Hiſtory*, a genus of imperfect cryſtals, found always in complex maſſes, and forming long ſingle pyramids, with very ſhort and ſlender columns.

ARTHRODIA, in *Anatomy*, a ſpecies of articulation, wherein the flat head of one bone is received into a ſhallow ſocket in the other. The humerus and ſcapula are joined by this ſpecies of articulation.

ARTHUR, the celebrated hero of the Britons, is ſaid to have been the ſon of Uther Pendragon king of Britain, and to have been born in 501. His life is a continued ſcene of wonders. It is ſaid that he killed four hundred and ſeventy Saxons with his own hand in one day; and after having ſubdued many mighty nations, and inſtituted the order of the Knights of the Round Table, died A. D. 542, of wounds which he received in battle. The moſt particular detail of his ſtory and his exploits is that given by Geoffroy of Monmouth: but the probable there is ſo blended with the marvellous and the extravagant, that not only the truth of the whole, but even the reality of Arthur's exiſtence, has been called in queſtion.

In this controverſy, Mr Whittaker has taken much pains to vindicate the exiſtence, and diſcriminate between the real and the fabulous tranſactions, of the Britiſh worthy. "Many of the actions (he obſerves) attributed to Arthur by the Welſh chronicles of Britain, are as abſurd in themſelves as they are ſpurious in their authority. Written, as thoſe narratives were, many centuries after the facts, and being merely the authentic accounts of Arthur, embelliſhed with the fictions and diſtorted by the [illegible] of fable, they [illegible] inconſiſtent [illegible] the hiſtory of the [illegible] And the [illegible] ignorance of the [illegible] abſtract, can be equalled only by the [illegible] and incredulity of the [illegible] coaſts of Arthur and [illegible] certainly ſpurious, others [illegible] And the relations of Suetonius, Dio, and Nennius, are not to be rejected, becauſe of the fabulous [illegible] impoſture has grafted upon them, and abſurdity admitted with them.

"The exiſtence of Arthur is evinced by [illegible] fables, which have at once annihilated [illegible] his name with the misjudging critic. And the reaſoner's own arguments totally turn [illegible] demonſtrate the point which they were intended to diſprove. The annals of Wales have long laboured in Arthur's commendation. The Highlanders have long had a poetical hiſtory of his exploits in their own language. The whole iſland is in traditionary poſſeſſion of his character; and 600 or 700 places within it are ſtill diſtinguiſhed by his name.

"The genuine actions of the chief are mentioned by his own hiſtorians, with a modeſty and conſiſtency that is no bad argument of the truth, and with a particularity of time and place that is a good evidence of the facts. They are noticed by men, whom the death of the hero had exempted from all temptation to flattery: they are recited by perſons, whom a proximity to the time had precluded from all poſſibility of miſtake: and they are atteſted by the beſt hiſtorical authority, writers who lived cotemporary with him, authors who converſed with his warriors, and hiſtorians that wrote within a few years after him. He is ſpoken of as the honourable father of the Britiſh [illegible] by the aged Llomarch, a writer actually cotemporary with him, and ſome time reſident at his court. One of his greater actions is incidentally recorded by Talieſſin, an hiſtorical bard living under Maelwn Gwined, who was a ſovereign among the Britons in the days of Arthur, Gildas, and Llomarch. Another of his conſiderable exploits is caſually intimated by Myrdhin Wyhlt or Merlinus Caledonius, who complains of the ſevere treatment which he himſelf received from Rydderch Hael, a king cotemporary with Urien Reged, and engaged with him in a war againſt the Saxons on the death of Ida in 590. And all his actions are particularly recited by Nennius.

"In the *Hiſtoria Britanum* of this laſt writer, Arthur's victories over the Saxons are thus recorded. The firſt battle was fought at the mouth of the river which is denominated *Glem*. The ſecond, third, fourth, and fifth, were upon another river, that is called *Duglas*, and lies in the region Linuis. The ſixth was on a ſtream, which bears the appellation of *Bassas*. The ſeventh was in the wood of Celidon, that is, in Cat Coit Celidon. The eighth was at Caſtle Gunnion. And the ninth was at the city of the Legion. The tenth was on the bank of the river Ribroit; the eleventh at the hill Agned [illegible] and the twelfth at Mount Badon. Theſe twelve battles of Arthur are deſcribed to us in the ſame manner as Vortimer's [illegible] Only the general facts are mentioned, and only the common names of places are recited, in both. And

Arthur. from the whole air and aſpect of the hiſtory, the remarkable conciſeneſs with which the notices are given, and the great eaſe with which the places are pointed out, the detail appears to have been drawn up at the diſtance only of a few years from the tranſactions, and when theſe little references were ſufficiently underſtood."

Mr Whittaker proceeds to aſcertain the ſcenes of Arthur's battles; after which he gives a relation of them with a ſurpriſing particularity. A ſevere critic might be apt to ſay, as Dr Kippis obſerves, that it requires all our faith in the author's judgment, as well as in his ingenuity and learning, not to ſuſpect that he ſometimes allows too much ſcope to fancy and conjecture. However, the whole of what he hath advanced is ſingularly curious, and deſerves peculiar attention and conſideration. And no one can help admiring the penetration with which he hath formed ſuch a regular detail of facts, from the combined aid of hiſtory, romance, and tradition. According to Mr Whittaker, Arthur's principal exploits were againſt the northern Saxons, whilſt he was only prince of the Silures, and Ambroſius was the dictator or pendragon of the Britons. "In a ſeries probably of five campaigns, and in a ſucceſſion certainly of eleven victories, this great commander had repelled the Saxons from the north of Flavia, diſlodged them from all Maxima, and diſpoſſeſſed them of all Valentia. And theſe were ſucceſſes ſo unchequered with misfortunes, ſo great in themſelves, and ſo beneficial to the public, that the name of Arthur claims the firſt rank in the liſt of military, and the better one of patriot, heroes." The twelfth battle of Arthur was fought in the ſouth of England, after he was elected to the pendragonſhip, againſt Cerdic the Saxon. "This (ſays Mr Whittaker) was a moſt extraordinary victory, and completes the circle of Arthur's military glories." In the author's account of this prince's conduct in peace, he aſſerts, that "Arthur ſaw that an appointment was wanted, which ſhould at once be a more regular and more honourable ſignature of merit; by the certainty of the honour and the greatneſs of the dignity, call out all the worth of of all the worthy in the nation; and collect it round the throne of the pendragon. Accordingly he eſtabliſhed a military order. It was the firſt that had ever been inſtituted in the iſland; and it has ſince been imitated by all the nations on the continent. By means of this aſſociation, Arthur raiſed among the provincials a general glow of ingenuous heroiſm, the firſt ſpirit of chivalry that ever appeared in Europe; that manly and honourable gallantry of ſoul, which has made him and his worthies the ſubject of romantic hiſtories over all the weſt of it. By this, and this alone, could he have been what hiſtory repreſents him, the Reverend Father of the Britiſh Heroes in general, even to the concluſion of the ſixth century, and nearly the middle of the ſeventh. The order naturally ſurvived its founder. And the members of it were denominated the Warriors of Arthur, though, the perſons were born half a century after his death." Mr Whittaker goes on to inform us, that under the prudent management of Arthur for 20 years together, a fair proſpect dawned upon the Britons, and long ſcenes of future glories opened to their imaginations. "But the gay viſion was deſtroyed at once by the commencement of a civil war. Many towns ſtill remained in ruins, the memorial of the former wars, and the diſgrace of the preſent. The diffuſed ſpirit of chivalry was turned upon the nation, and heroiſm became the tool of diſſenſion. And the dreadful combination of civil evils was begun and conſummated, at once, by the death of the renowned Arthur in battle. Thus died the incomparable hero in 542."

Ibid. p. 34—64.

Arthur's Seat.

To theſe obſervations it may not be improper to add the following account of the diſcovery of Arthur's tomb, which appears to be tolerably well authenticated. Henry II. who was the firſt of the Plantagenet line, being, in the laſt year of his reign, at Pembroke, and hearing there a Welſh bard ſinging to his harp the ſtory of Arthur, concluding with an account of his death, and burial in the churchyard of Glaſtonbury between two pyramids; the king inſtantly gave orders that the matter ſhould be inquired into, and the body dug up. This was done as the king directed; and at the depth of ſeven feet was found a vaſt ſtone, whereon was faſtened a leaden croſs, with this inſcription on the inſide: *Hic Jacet Sepultus Inclytus Rex Arturius in Inſula Avalonia*; i. e. "Here lies the famous King Arthur, buried in the iſle of Avalon." Digging ſtill lower, they found the king's body in the trunk of a tree, his beautiful queen lying by him, with long flowing hair, in colour bright as gold, which however ſunk into duſt when touched. The king's bones were very large ſized; and in his ſkull there were ten wounds or more, all cicatrized, except that of which he died. This diſcovery was made in the year 1189, as Giraldus Cambrenſis tells us, who ſaw theſe bones, and examined the whole matter carefully. There was alſo a table containing this ſtory, ſet up in the monaſtery of Glaſtonbury, and the leaden croſs with the inſcription remained there till the diſſolution of the monaſtery, where it was ſeen by the great antiquary Leland, but what is become of it ſince does not appear.

Of the different places above alluded to as being diſtinguiſhed by our hero's name, and ſerving to evince his exiſtence, the following may be mentioned as one of the principal.

Arthur's Seat, a high hill in the neighbourhood of Edinburgh, ſaid to have been ſo denominated from a tradition that King Arthur ſurveyed the country from its ſummit, and had alſo defeated the Saxons in its neighbourhood. This hill riſes by a ſteep and rugged aſcent, till it terminates in a rocky point near 700 feet high from the baſe, being more than double the height of the croſs on the top of St Paul's, London, which is 340 feet. On the ſouth it is in many parts a perpendicular rock, compoſed of baſaltic pillars regularly pentagonal or hexagonal, about three feet in diameter, and from 40 to 50 feet in height. Contiguous upon the weſt, and partly connected with it at the baſe, are Saliſbury Crags, of inferior height, but exhibiting an appearance equally ſingular and grand. They preſent to the city an awful front of broken rocks and precipices, forming a ſort of natural amphitheatre of ſolid rock; and backward from the craggy verge above, the hill forms an extenſive irregular ſlope, the ſurface affording paſture to numerous flocks of ſheep. The crags, beſides ores, ſpars, rock plants, and here and there, it is ſaid, ſome precious ſtones, afford an inexhauſtible ſupply of ſtone for paving the ſtreets

Artichoke, Article.

ſtreets and other purpoſes. In quarrying, a part of the crags has been worn down into a ſpacious ſhelf, having the appearance of a lofty terrace, and ſtretching a conſiderable length. From hence is a near and diſtinct proſpect of the city, with its environs and the adjacent country. But from the pinnacle called Arthur's Seat the view is more noble and extenſive. The traveller may here ſit and ſurvey at his eaſe the centre of the kingdom, beſides having a complete view of Edinburgh and its caſtle, on which he looks down as if ſeated among the clouds. In a word, the German ocean, the whole courſe of the Forth, the diſtant Grampians, and a large portion of the moſt populous and beſt cultivated part of Scotland, form a landſcape ſublime, various, and beautiful.

The denomination of this hill, derived as above, has been adduced as an argument againſt thoſe who diſpute the exiſtence of the Britiſh Arthur. That derivation, however, though probable, is not without uncertainty. For *Arthur's Seat* is ſaid to be derived, or rather corrupted, from *A'rd Seir*, a "place or field of arrows," where people ſhot at a mark: And this not improperly; for among theſe cliffs is a dell or recluſe valley, were the wind can ſcarcely reach, now called the *Hunter's Bog*, the bottom of it being a moraſs. The adjacent crags are ſuppoſed to have taken their name from the earl of *Saliſbury*, who in the reign of Edward III. accompanied that prince in an expedition againſt the Scots.

ARTICHOKE. See CINARA, BOTANY *Index*.

ARTICLE, a clauſe or condition of a contract, treaty, &c. It is alſo a ſmall part or diviſion of a diſcourſe, book, or writing, &c.

ARTICLE of Death, the laſt pangs or agony of one juſt expiring.

ARTICLE of Faith, is by ſome defined a point of Chriſtian doctrine, which we are obliged to believe, as having been revealed by God himſelf, and allowed and eſtabliſhed as ſuch by the church.

The thirty-nine articles were founded, for the moſt part, upon a body of articles compiled and publiſhed in the reign of Edward VI. They were firſt paſſed in the convocation, and confirmed by royal authority in the year 1562. They were afterwards ratified anew in the year 1571, and again by Charles I. The law requires a ſubſcription to theſe articles of all perſons ordained to be deacons or prieſts, 13 Eliz. cap. 12. of all clergymen inducted to any eccleſiaſtical living, by the ſame ſtatute, and of licenſed lecturers and curates, 13 Eliz. cap. 12. and 13 and 14 Ch. II. cap. 4. of the heads of colleges, of chancellors, officials, and commiſſaries, and of ſchoolmaſters. By 1 Will. III. cap. 12. diſſenting teachers are to ſubſcribe all, except the 34th, 35th, and 36th, and part of the 20th (and in the caſe of Anabaptiſts, except alſo part of the 27th); otherwiſe they are exempted from the benefits of the act of toleration.

ARTICLE, in *Grammar*, denotes a particle uſed in moſt languages for the declining of nouns, and denoting the ſeveral caſes and genders thereof.

The uſe of articles ariſes chiefly hence, that in languages which have no different terminations, to expreſs the different ſtates and circumſtances of nouns, there is ſomething required to ſupply that office.

The Latins have no articles; but the Greeks and, moſt of the modern languages, have had recourſe to them, for fixing and aſcertaining the vague ſignification of common and appellative names.

Article.

The Greeks have their ὁ, the eaſtern tongues their *he emphaticum*; the Italians their *il*, *lo*, and *la*. The French their *le*, *la*, and *les*. The Germans their *der*, *das*, *dat*.

The Engliſh alſo have two articles, *a* and *the*; which being prefixed to ſubſtantives, apply their general ſignification to ſome particular things.

Some grammarians make the article a diſtinct part of ſpeech; others will have it a pronoun, and others a noun adjective. See GRAMMAR.

Articles are of great ſervice in a language, as they contribute to the more neat and preciſe expreſſing of ſeveral properties and relations, which muſt otherwiſe be loſt. And hence one great advantage of ſuch languages over the Latin, in that the article being either expreſſed or left out, makes an alteration in the ſenſe, which the Latins cannot diſtinguiſh. Thus when the devil ſaid to our Saviour, *Si tu es Filius dei*, it may either be underſtood, "if thou art *a* ſon of God," or, "if thou art *the* ſon of God." The Italians even prefix articles to proper names, which do not naturally need any, becauſe they themſelves ſignify things individually. Thus they ſay, *il Arioſto*, *il Taſſo*, *il Petrarcha*. Even the French join the article to the proper names of kingdoms, provinces, &c. as *la Suede*, *la Normandie*. And we likewiſe annex it to the names of certain mountains and rivers; as, The *Rhine*, the *Danube*, the *Alps*, &c.

ARTICULATE SOUNDS, are ſuch ſounds as expreſs the letters, ſyllables, or words of any alphabet or language; ſuch are formed by the human voice, and by ſome few birds, as parrots, &c.

ARTICULATION, or JOINTING, is the joining of bones together. See ANATOMY.

ARTICULATION, in *Botany*, is the connexion of parts that conſiſt of joints or knees, ſuch as the pods of French honeyſuckles, which when ripe divide into ſo many parts as there are knees or joints; alſo thoſe parts of plants which ſwell into nodes or joints, and which uſually ſend forth branches.

ARTIFICER, a perſon whoſe employment it is to manufacture any kind of commodity, as in iron, braſs, wool, &c. ſuch are ſmiths, braſiers, carpenters, &c. The Roman artificers had their peculiar temples, where they aſſembled and choſe their own patron, to defend their cauſes; they were exempted from all perſonal ſervices. Taruntenus Paternus reckons 32 ſpecies of artificers, and Conſtantine 35, who enjoyed this privilege. The artificers were incorporated into divers colleges or companies, each of which had their tutelar gods, to whom they offered their worſhip. Several of theſe, when they quitted their profeſſion, hung up their tools, a votive offering to their gods. Artificers were held a degree below merchants, and *argentarii* or money-changers, and their employment more ſordid. Some deny, that in the earlieſt ages of the Roman ſtate artificers were ranked in the number of citizens: others, who aſſert their citizenſhip, allow that they were held in contempt, as being unfit for war, and ſo poor that they could ſcarcely pay any taxes. For which reaſon they were not entered among the citizens in the cenſor's books; the deſign of the cenſus being only to

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Artificers. Artillery.

see what number of persons were yearly fit to bear arms, and to pay taxes towards the support of the state. It may be added, that much of the artificers business was done by slaves and foreigners, who left little for the Romans to mind but their husbandry and war. By means of the arts, the minds of men are engaged in inventions beneficial to the whole community; and thus prove the grand preservative against the barbarism and brutality, which ever attend on an indolent and inactive stupidity.

By the English laws, artificers in wool, iron, steel, brass, or other metal, going out of the kingdom into any foreign country without license, are to be imprisoned three months, and fined in a sum not exceeding one hundred pounds. And such as going abroad, and not returning on warning given by our ambassadors, &c. shall be disabled from holding lands by descent or devise, from receiving any legacy, &c. and be deemed aliens. Stat. 5. Geo. I. cap. 27. By 23 Geo. II. cap. 13. § 1. penalty is also inflicted on seducing artificers to go abroad. Ramazini has a treatise on the diseases of artificers.

ARTIFICIAL, in a general sense, denotes something made, fashioned, or produced by art, in contradistinction from the production of nature.

Artificial is also frequently used for factitious. Thus we have artificial sal ammoniac, artificial borax, &c.

Artificial *Fire-works* are compositions of inflammable materials, chiefly used on solemn occasions, by way of rejoicing. See Pyrotechny.

Artificial *Lightning*. See Electricity and Lightning.

Artificial *Lines*, on a sector or scale, are certain lines so contrived, as to represent the logarithmic sines and tagents; which, by the help of the line of numbers will solve all questions in trigonometry, navigation, &c. pretty exactly.

Artificial *Magnets*. See Magnets.

ARTIGI, indeclinable, (Pliny); *Artigis*, (Ptolemy); a town of the Turduli, in Bætica. Now *Albuna*.

ARTILLERY, in its general sense, denotes the offensive apparatus of war, particularly of the missile kind. Among the French the term was anciently appropriated to archery. In its modern acceptation it signifies fire-arms, mounted on their carriages and ready for action, with their balls, their bombs, their grenades, &c.

If we take the term in a more extensive meaning, it includes the powder, the matches, instruments for fire-works, the utensils of ordnance, the machines which facilitate their motion and transport them, the vehicles over which they traverse rivers, every thing necessary to them, and all that enters into the form of a train of artillery.

The same word, still farther extended in its meaning, likewise comprehends the men destined for the service of the *artillery*; the people who provide the artillery with materials and implements when engaged, the cannoniers, the bombardiers, the officers of every rank, and engineers of every kind.

By *artillery* is likewise understood the science which the officers of artillery ought to possess. This science teaches to know the nature of all the materials and ingredients which enter into the composition and the structure of every thing relative to the artillery, such as nitre, sulphur, charcoal; the properties of air and fire; the composition and preparation of gunpowder; the materials for fire-works; the construction, proportions, &c. of the different warlike machines; the arrangement, movement, and whole management, of cannon, &c. in the field or in sieges, in such manner, that each of them, according to the length of its tube and the diameter of its bore, may be situated in the best place and at the propereſt distance for execution, and that the whole train taken together may reciprocally assist and support each other with the greatest advantage. Artillery.

Artillery has undergone many changes from its origin to the present time. The artillery of the ancients were the catapulta, the balistæ, the different kinds of slings, &c. In latter ages, the Franks used the hatchet as a missile weapon, throwing it in the same manner as the Americans do theirs called the *tomahawk*. The Gascons and Genoese were excellent cross-bow men. The Swiss owed their victories to their strength and skill in the use of the pike, halberd, and espadon or two-handed sword; and the victories of Cressy, Poictiers, and Agincourt, will occasion the valour and skill of the English archers to be transmitted down to latest posterity. See Archery.

The chevalier Folard was extremely attached to the ancient machines first mentioned, and seemed even to prefer them to our fire-arms: an opinion which must appear not a little extraordinary from such a person. Father Daniel might well be mistaken in the comparison which he made between the effects of ancient and modern artillery, and in his conclusion that the latter was of little use: the situation of this good father removed him from the scenes of war and the opportunities of military experience. But it is astonishing, that one so learned in the military art as the commentator of Polybius, who had ocular demonstration of the success of modern artillery, should have declared so violently against it. Whatever be the case with these authors and their maxims, it may be asserted that cannon is one of the most singular discoveries which have been made amongst men; and by little and little it has changed the whole art of war, and of consequence influenced the whole system of policy in Europe. The era of artillery is dated from the battle of Crassy in 1346, because it is only from that day that cannon were mentioned in battle. Edward III. of England successfully employed some pieces of artillery placed in the front of his army. The invention of artillery was then known in France as well as in England; but probably Philip VI. marched with so much hurry and precipitation to attack his enemy, that he left his cannon as useless encumbrances behind him. The ignorance of that age in mechanical arts considerably retarded the progress of artillery; and that of which they were then possessed was so unwieldy and imperfect, that they could not possibly discern its importance and efficacy in practice.

After the invention of gunpowder, the Spaniards were the first who armed part of their foot with muskets and harquebusses, and mixed them with the pikes. In this they were soon imitated by most other nations; though the English had not entirely laid aside their favourite weapon the long bow, and generally taken to

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Artillery. the uſe of fire arms, during the reign of Queen Elizabeth.

The firſt muſkets were very heavy, and could not be fired without a reſt: they had matchlocks, and barrels of a wide bore, that carried a large ball and charge of powder, and did execution at a great diſtance. The muſketeers on a march carried only their reſts and ammunition; and had boys to bear their muſkets after them, for which they were allowed great additional pay. They were very ſlow in loading, not only by reaſon of the unwieldineſs of the pieces, and becauſe they carried the powder and balls ſeparate, but from the time it took to prepare and adjuſt the match; ſo that their fire was not near ſo brisk as ours is now. Afterwards a lighter kind of matchlock muſket came into uſe; and they carried their ammunition in bandeliers, which were broad belts that came over the ſhoulder, to which were hung ſeveral little caſes of wood covered with leather, each containing a charge of powder: the balls they carried looſe in a pouch, and they had alſo a priming horn hanging by their ſide. Matchlocks were, about the beginning of this century, univerſally diſuſed in Europe, and the troops were armed with firelocks; to which, much about the ſame time, the bayonet being added, pikes alſo were laid aſide; which latter change, whether it was for the better or not, is a point that ſtill admits of diſpute among the beſt military writers, who are divided in their opinions about it, though moſt of them diſapprove of it.

The old Engliſh writers call thoſe large muſkets *calivers*; the harquebus was a lighter piece, that could be fired without a reſt. The matchlock was fired by a match, fixed by a kind of tongs in the ſerpentine or cock, which by pulling the trigger was brought down with great quickneſs upon the priming in the pan, over which there was a ſliding cover, which was drawn back by hand, juſt at the time of firing. There was a great deal of nicety and care required to fit the match properly to the cock, ſo as to come down exactly true on the priming, to blow the aſhes from the coal, and to guard the pan from the ſparks that fell from it: a great deal of time was alſo loſt in taking it out of the cock, and returning it between the fingers of the left hand, every time that the piece was fired; and wet weather often rendered the matches uſeleſs. However, moſt writers allow that they were very ſure, and leſs apt to miſs fire than the firelock.

The firelock is ſo called, from producing fire of itſelf, by the action of the flint and ſteel. The moſt ancient invention of this ſort is the wheel lock, which we find mentioned in Luigi Collado's Treatiſe of Artillery, printed at Venice, 1586, as then lately invented in Germany. This ſort of lock was uſed till within theſe hundred years, eſpecially for piſtols and carabines. It was compoſed of a ſolid ſteel wheel, with an axis, to which was faſtened a chain, which, by being wound round it, drew up a very ſtrong ſpring; on pulling the trigger, the ſpring acting, whirled the wheel about with great velocity, and the friction of the edge of it (which was a little notched) againſt the ſtone produced the fire; the cock was made ſo as to bring the ſtone upon the edge of the wheel, part of which was in the pan, and touched the priming; they uſed any common hard pebble for that purpoſe, which ſerved as well as flint.

Theſe locks were inconvenient, took time to wind up (or span, as they termed it), and ſometimes would not go off; an inſtance of which may be ſeen in Ludlow's Memoirs. Artillery.

When the firelock, ſuch as we now uſe, was invented, we cannot aſcertain; it is called by writers of the middle of the laſt century, a *fuſpiſano* or *fuſpiſance*, which being the Dutch word for a *firelock*, ſeems to indicate that it is a Dutch invention, and that we took it from them. But Ward, in his Animadverſions of War, printed in 1639. p. 502, after deſcribing the exerciſe of the firelock, piſtol, and carabine (by which he means the wheel-lock), ſays, that as moſt of our pieces go with Engliſh locks, which differ from firelocks, he ſhall add the method of handling them; and then gives the exerciſe of the fuſpoone exactly; by which it appears, that there was little or no difference between that and the pieces now in uſe. The moſt modern writers call it a *fuſee*, from the French word *fuſil*, whence the name of fuſileers is ſtill continued to ſeveral of our regiments, which were the firſt that were armed with them on the diſuſe of matchlocks.

They uſed the muſket and reſt in England ſo late as the beginning of the civil wars, as may be ſeen in Col. Bariffe's Young Artillery Man, printed at London, 1643.

Figuera, in his embaſſy in 1518, relates, that the Perſians would neither make uſe of infantry nor of artillery, becauſe by them the impetuoſity of attack and the facility of retreat were equally encumbered and retarded: in theſe expedients alone their addreſs and their glory conſiſted. This method of advancing and recalling is widely different from the preſent conduct of war, as the artillery in armies is now prodigiouſly multiplied, and muſt be tranſported to every place where any body of troops whatever is deſtined to operate.

The length and diameter of cannon has been much diminiſhed, which muſt likewiſe proportionably diminiſh their weight. It is by long practice and experience that they have diſcovered how much might be deduced from their magnitude in both theſe reſpects with propriety, without hurting the grand effects which, on ſome occaſions, it is neceſſary they ſhould produce, by rendering them more eaſy to be wielded, which was the advantage purſued by leſſening their ſize. See further the articles Cannon, Gunnery, and Projectiles.

Improvements, however, are ſtill making, and will probably long continue to be made, in theſe ignivomous machines that mock the thunder, which, though they ſeem to be invented for the deſtruction of the human race and the ſubverſion of empires, have yet by their effects rendered war leſs barbarous and leſs ſanguine; political alliances have been more ſucceſsfully conciliated among all nations, conqueſts are become leſs frequent and leſs rapid, and ſucceſſes in war have been more eaſily reduced to calculation.

The change introduced in the military art by the modern artillery, Dr Smith obſerves, has enhanced greatly both the expence of exerciſing and diſciplining any particular number of ſoldiers in time of peace, and that of employing them in time of war. Both their arms and their ammunition are become more expenſive. A muſket is a more expenſive machine than a javelin *Wealth of Nations*, vol iii. p. 70.

or

Artillery. or a bow and arrows; a cannon or a mortar, than a baliſta or a catapulta. The powder which is ſpent in a modern review is loſt irrecoverably, and occaſions a very conſiderable expence. The javelins and arrows which were thrown or ſhot in an ancient one, could eaſily be picked up again, and were beſides of very little value. The cannon and the mortar are not only much dearer, but much heavier machines than the baliſta or catapulta, and require a greater expence, not only to prepare them for the field, but to carry them to it. As the ſuperiority of the modern artillery too over that of the ancients is very great, it has become much more difficult, and conſequently much more expenſive, to fortify a town ſo as to reſiſt even for a few weeks the attack of that ſuperior artillery.

In modern war the great expence of fire arms gives an evident advantage to the nation which can beſt afford that expence; and conſequently, to an opulent and civilized, over a poor and barbarous nation. In ancient times, the opulent and civilized found it difficult to defend themſelves againſt the poor and barbarous nations. In modern times the poor and barbarous find it difficult to defend themſelves againſt the opulent and civilized. The invention of fire arms, an invention which at firſt ſight appears to be ſo pernicious, is certainly favourable both to the permanency and to the extenſion of civilization.

It has to many appeared matter of ſurpriſe, that the battles of the ancients ſhould be deſcribed with an order, perſpicuity, and circumſtantial minuteneſs, which are not to be found in the military writers of modern times. Scholars have endeavoured to explain this difference by obſerving the immenſe diſproportion, in point of dignity and abilities, between the military hiſtorians of modern Europe and thoſe of Greece and Rome. But the difficulty will be better ſolved, Dr Gillies thinks, by reflecting on the changes introduced into the art of war by the change of artillery; which in military operations, form the pivot on which the whole turns. 1. From the nature of fire arms, modern battles are involved in ſmoke and confuſion. 2. From the ſame cauſe, modern armies occupy a much greater extent of ground, and begin to act at much greater diſtances: which renders it more difficult to obſerve and aſcertain their manœuvres. 3. The immenſe train of artillery, ammunition, &c. required in the practice of modern war, gives a certain immobility to our armies, which renders it impoſſible to perform, without great danger, thoſe rapid evolutions in fight of an enemy, which ſo often decided the battles of the ancients. With us, almoſt every thing depends on the judicious choice of ground, a matter requiring great military genius, but not admitting the embelliſhments of hiſtorical deſcription.

In the battles of the Greeks and Romans, the extraordinary diſproportion between the numbers ſlain on the ſide of the victors and the vanquiſhed has been obſerved as another remarkable circumſtance. But this neceſſarily reſulted from the nature of their arms. Their principal weapons being not miſſile, but manual, armies could not begin to act till they had approached ſo near to each other, that the conquered found themſelves cut off from all poſſibility of retreat. In modern times, ſuch conſequences ſeldom take place. The uſe of fire arms (which often renders the action itſelf more bloody, furniſhes the defeated party with various means of retreating with conſiderable ſafety. The ſphere of military action is ſo widely extended in modern times, that before the victors can run over the ſpace which ſeparates them from the vanquiſhed, the latter may fall back, and proceed with little loſs beyond their reach; and ſhould any village, hedge, ravine, &c. be found in their way, may often check the ardour of the purſuers. Upon theſe conſiderations, the invention of gunpowder and modern artillery may be ſaid to have ſaved the effuſion of human blood. Equeſtrian engagements (ſince the principles on which cavalry act remain nearly the ſame in every age) are ſtill diſtinguiſhed by ſimilar circumſtances to thoſe which appear ſo extraordinary in the battles of antiquity. Artillery, Artiſt.

Artillery Park, the place in the rear of both lines in an army, for encamping the artillery, which is drawn up in lines, of which one is formed by the guns; the ammunition waggons make two or three lines, 60 paces behind the guns, and 30 diſtant from one another; the pontoons and tumbrils make the laſt line. The whole is ſurrounded with a rope which forms the park: the gunners and matroſſes encamp on the flanks; and the bombardiers, pontoon men, and artificers, in the rear.

Artillery Train, a certain number of pieces of ordnance, mounted on carriages, with all their furniture fit for marching.

Artillery Company, a band of infantry, conſiſting of 600 men, making part of the militia or city guard of London.

ARTIST, in a general ſenſe, a perſon ſkilled in ſome art. Mr Harris defines an artiſt to be, "A perſon poſſeſſing an habitual power of becoming the cauſe of ſome effect, according to a ſyſtem of various and well approved precepts." See Art.

We are told * of a privilege granted at Vicenza to artiſts, like that of *clergy* in England: in virtue thereof criminals adjudged to death ſave their lives if they can prove themſelves the moſt excellent and conſummate workmen in any uſeful art. This benefit is allowed them *in favorem artis*, for the firſt offence, except in ſome particular crimes, of which coining is one; for here the greater the artiſt, the more dangerous the perſon.

* *Evel. Diſcourſe of Medals*, p. 237, &c.

Artist (*Artiſta*), in an academical ſenſe, denotes a philoſopher or proficient in the faculty of arts.

In the early ages of univerſities, the ſeven liberal arts completed the whole courſe of ſtudy, or philoſophy, as it is called: whence the maſters of this faculty were denominated *Artiſts*. What they underſtood by the liberal arts uſed to be ſummed up in the following Latin verſe.

Lingua, Tropus, Ratio, Numerus, Tonus, Angulus, Aſtra.

Artist is more peculiarly uſed, by Paracelſus and other adepts, for a chemiſt or alchemiſt. We find frequent mention, in authors of this claſs, of Elias Artiſta, or Elias the artiſt, who is to come ſome time before the diſſolution of the world, and reſtore and make perfect all arts and ſciences, but eſpecially the gold-making art; and uſher in a truly golden age, or millennium. The lower and meaner things in this ſublime art, Paracelſus obſerves, God has permitted to be already diſcovered; but for the greater and more important

Artobriga || Aruba

portant matters, as the transmutation of other metals into gold, they are reserved to the coming of Elias the artist.

ARTOBRIGA, a town of Vindelicia (Ptolemy): Now *Altzburg*, in Bavaria, on the Danube, below Ingolstadt (Aventinus): but Cluverius supposes it to be *Lebenau*, on the Saltzbach, below Lauffen, in the archbishopric of Saltzburg.

ARTOCARPUS, the BREAD FRUIT TREE. See BOTANY *Index*.

ARTOIS, a late province of France, and one of the finest and most fertile in the whole kingdom. Formerly it was one of the 17 provinces of the Netherlands, but now belongs entirely to France, and is included in the department of the Straits of Calais. The names of *Artois*, and *Arras* its capital, are derived from the Atrebates, a people of Gallia Belgica, mentioned by Julius Cæsar. Its greatest length from north to south is about 24 leagues, and its breadth about 12, being bounded to the south and west by Picardy, to the east by Hainault, and to the north by Flanders. A considerable trade is carried on in the province in grain, flax, hops, wool, and linen cloth. The most considerable places in Artois are, Arras the capital, Bapaume, Bethune, St Venant, and St Omer.

ARTOLICA, in *Ancient Geography*, a town of the Salassii in Gallia Cispadana, at the foot of the Alps: now called *la Tuile* by the inhabitants, a hamlet of Savoy, in the duchy of Aoust, at the foot of Mount St Bernard the Less.

ARTOTYRITES, a Christian sect, in the primitive church, who celebrated the eucharist with bread and cheese, saying, that the first oblations of men were not only of the fruits of the earth, but of their flocks. The word is derived from ἄρτος, *bread*, and τυρος, *cheese*.

The Artotyrites admitted women to the priesthood and episcopacy; and Epiphanius tells us, it was a common thing to see seven girls at once enter into their church, robed in white, and holding a torch in their hand; where they wept, and bewailed the wretchedness of human nature, and the miseries of this life.

ARUA, in *Ancient Geography*, a town of Bætica, in the jurisdiction of the Conventus Hispalensis: now *Aldea*, a citadel of Andalusia, on the Bætis, or Guadalquiver, seven leagues above Seville.

ARVALES FRATRES, in *Roman Antiquity*, a college of 12 priests, instituted by Romulus, and chosen out of the most noble families, himself being one of that body: they assisted in the sacrifices of the ambervalia annually offered to Ceres and Bacchus, for the prosperity of the fruits of the earth; when they wore on their heads crowns made of ears of corn. The original of this institution was as follows: Acca Laurentia, Romulus's nurse, was accustomed once a year to make a solemn sacrifice for a blessing on the fields, her 12 sons always assisting her in the solemnity; but at last losing one of her sons, Romulus offered himself to supply his place, and gave this small society the name of *Arvales fratres*. This order was in great repute at Rome: they held the dignity for life, and never lost it upon account of imprisonment, banishment, or any other accident.

ARUBA, a small island on the coast of Terra Firma, subject to the Dutch, and situated in W. Long. 69. 30. N. Lat. 12. 30.

ARUCI, in *Ancient Geography*, a town of the Celtici, in the north of Lusitania, (Antonine, Inscription), called also *Aruci Novum*, to distinguish it from the following: Now supposed to be *Moura*, a small city of Portugal, near the confluence of the Ardila and Guadalquiver.

ARUCI *Vetus*, in *Ancient Geography*, a small city of the Turdetani, in Bætica, (Ptolemy); now *Aroche*, a hamlet of Andalusia, on the confines of Portugal and Estremadura, on the river Gama, seven leagues to the east of Aruci Novum or Moura. From it a mountain, in its neighbourhood, takes the name *Arucitanus*. Now *la Sierra de Aroche*.

ARUCIA, in *Ancient Geography*, a town of Illyria, in the inland parts of Liburnia, (Ptolemy). Now *Bregna*, according to some; but *Ostrobarz*, according to others, a citadel of Morlachia.

ARVERNI an appellation early used for the capital of the Arverni, according to the custom of the latter ages of naming towns from the people; it was formerly called *Nemossus*, (Strabo). The *Arverni*, a brave and ancient people, and one of the most powerful nations of Gaul, claimed affinity with the Romans, as descendants from Antenor, (Lucan): and after their conquest by the Romans, their ancient liberty was preserved to them on account of their bravery, (Pliny). Above 1000 years ago the town was called *Clarus Mons*, from its situation, (Valesius.) Now *Clermont*, in Auvergne. E. Long. 3 20. N. Lat. 45. 42.

ARVIL SUPPER, a feast or entertainment made at funerals, in the north part of England. Arvil bread is the bread delivered to the poor at funeral solemnities: and *arvil*, *arval*, *arfal*, are used for the burial or funeral rites; as,

Come, bring my jerkin, Tibb, I'll to the *arvil*;
Yon man's dea seuy seoun, it makes me marvil.
Yorksh. Dial. p. 58.

ARVIRAGUS, an ancient British king who flourished in the time of the emperor Domitian. He gained a complete victory over Claudius: but being soon after besieged in the city of Winchester, he made a treaty with the Romans, and married the emperor's daughter Genuissa. This monarch lived to a good old age: he confirmed the ancient laws, enacted new ones, and liberally rewarded persons of merit.

ARUM. WAKEROBIN, or CUCKOW-PINT. See BOTANY *Index*.

ARUNDA, a town of Hispania Bætica, on the Anas, or Guadiana, (Ptolemy, Pliny): Now said to be *Ronda*, in the province of Granada, on the confines of Andalusia. W. Long. 5. 40. Lat. 36. 26.

ARUNDEL, THOMAS, archbishop of Canterbury in the reigns of Richard II. Henry IV. and Henry V. was the second son of Robert earl of Arundel and Warren, and brother of Richard earl of Arundel, who was beheaded. At 22 years of age, from being archdeacon of Taunton he was raised to the bishopric of Ely, the 6th of April 1375, in the reign of Edward III. He was a great benefactor to the church and palace of this see; among other donations he gave a curious table of massy gold, adorned with precious

Arundel. ſtones, which had been given to Prince Edward by the king of Spain, and ſold by the latter to Biſhop Arundel. In 1386, he was appointed lord chancellor of England; two years after, he was tranſlated to the ſee of York; and, in 1396, was advanced to the archiepiſcopal ſee of Canterbury, when he reſigned the chancellorſhip. This was the firſt inſtance of the tranſlation of an archbiſhop of York to the ſee of Canterbury. Scarcely was he fixed in this ſee, when he had a conteſt with the univerſity of Oxford about the right of viſitation. The affair was referred to King Richard, who determined it in favour of the archbiſhop. At his viſitation in London, he revived an old conſtitution, by which the inhabitants of the reſpective pariſhes were obliged to pay to their rector one halfpenny in the pound out of the rent of their houſes. In the ſecond year of his tranſlation, a parliament being held at London, the commons with the king's leave impeached the archbiſhop, together with his brother the earl of Arundel, and the duke of Glouceſter, of high treaſon. The archbiſhop was ſentenced to be baniſhed, and within forty days to depart the kingdom on pain of death. He retired firſt to France; and then to the court of Rome, where Pope Boniface IX. gave him a kind reception. About this time the duke of Lancaſter (afterwards Henry IV.) was in France, having been baniſhed by King Richard. The nobility and others, tired with the oppreſſions of Richard, ſolicited the duke to take the crown. This their requeſt they drew up in a letter, and ſent it over by faithful meſſengers to Archbiſhop Arundel, deſiring him to be their advocate on this occaſion with the duke. The archbiſhop, being a fellow ſufferer, gladly accepted the office; and went with the meſſengers to the duke at Paris, where they delivered the letters from the nobles and commons of England, and the archbiſhop ſeconded them with the beſt arguments he could invent. The inviting offer, after ſome objections which were eaſily obviated, the duke accepted; and upon his acceſſion to the throne, Arundel, who had returned with him to England, was reſtored to his ſee. In the firſt year of this prince's reign, Arundel ſummoned a ſynod which ſat at St Paul's. The next year the commons moved that the revenues of the church might be applied to the ſervice of the public; but Arundel oppoſed the motion with ſuch vigour, that it was thrown aſide. In the year 1408, Arundel began to exert himſelf againſt the Lollards, or Wickliffites; and his zeal for ſuppreſſing that ſect carried him to ſeveral unjuſtifiable ſeverities againſt the heads of it, particularly againſt Sir John Oldcaſtle and Lord Cobham. He alſo procured a ſynodical conſtitution, which forbade the tranſlation of the Scriptures into the vulgar tongue. This prelate died at Canterbury, Feb. 20. 1413, of an inflammation in his throat, with which he was ſeized (as is pretended) whilſt he was pronouncing ſentence upon Lord Cobham. The Lollards aſſerted this to be a judgment from God; and indeed Biſhop Goodwin ſpeaks in the ſame manner, ſaying, "He who had withheld from the people the word of God, the food of the ſoul, by the juſt judgment of God had his throat ſo cloſed, that he could not ſpeak a ſingle word, nor ſwallow meat or drink, and ſo ſtarved to death." He was buried in the cathedral church of Canterbury, near the weſt end, under a monument erected by himſelf in his lifetime. To this church he was a conſiderable benefactor; for he built the lantern-tower and great part of the nave: gave a ring of five bells, called from him *Arundel's ring*, ſeveral rich veſtments, a mitre enchaſed with jewels, a ſilver gilt croſier, and two golden chalices. Arundel, Arundelian.

ARUNDEL, a borough and market town in Suſſex, ſeated on the north-weſt ſide of the river Arun, over which there is a bridge. It had a harbour, wherein a ſhip of 100 tons burden might ride; but the ſea had ruined it ſo far, that, in 1733, an act paſſed for repairing it, and for erecting new piers, locks, &c. The caſtle, which gives the title of *earl* to its poſſeſſors, is ſeated on the eaſt of the Tame, and is reputed to be a mile in compaſs. It ſends two members to parliament; and is 55 miles ſouth-weſt-by-ſouth of London, and 10 miles eaſt of Chicheſter. Arundel is the premier earldom in England, belonging to the illuſtrious family of Norfolk; and is the only title in England that goes along with the lands. W. Long. 0. 25. N. Lat. 50. 45.

ARUNDEL Oil, in the *Materia Medica*. At Bombay, Gombroon, and Surat, in the Eaſt Indies, there grows a tree which bears a nut encloſed in a rough huſk, which reſembles much the horſe cheſnut; and the kernel of the nut yields an oil by expreſſion, which is of a purgative nature. A tea-ſpoonful of it is reckoned a doſe. The tree goes by the name of the *arundel tree* at Bombay, and its oil by that of the *arundel oil*. Mr Sinclair, one of the ſurgeons belonging to the royal regiment of artillery, who was formerly ſurgeon to an Eaſt India ſhip, gave Dr Monro of London a ſmall bottle full of this oil, which he ſaid was much uſed for the cure of the dyſentery in India, and that he had given it in four recent caſes of dyſentery with ſucceſs. Dr Monro thinks it probable that this is the oil of the purging nuts mentioned in Dale's Pharmacologia, which are got from the tree called *lignum moluccenſe*, *pavana dictum*, *fructu avellanæ*, J. B. 1. 342; and *pinus Indica*, *nucleo purgante*, C. B. 492; and the *palma Chriſti Indica*, Tournefort Mat. Med.

ARUNDELIAN MARBLES, OXFORD MARBLES, or PARIAN CHRONICLE, are ancient ſtones (as has been ſuppoſed), whereon is inſcribed a chronicle of the city of Athens, engraven in capital letters in the iſland of Paros, one of the Cyclades, 264 years before Jeſus Chriſt. They take their firſt name from Thomas earl of Arundel, who procured them out of the Eaſt, or from Henry his grandſon, who preſented them to the univerſity of Oxford.

The Arundelian marbles, in their perfect ſtate, contained a chronological detail of the principal events of Greece during a period of 1318 yeats, beginning with Cecrops, before Chriſt 1582 years, and ending with the archonſhip of Diognetus, before Chriſt 264. But the chronicle of the laſt 90 years is loſt; ſo that the part now remaining ends at the archonſhip of Diotimus, 354 years before the birth of Chriſt; and in this fragment the inſcription is at preſent ſo much corroded and effaced, that the ſenſe can only be diſcovered by very learned and induſtrious antiquaries; or, more properly ſpeaking, ſupplied by their conjectures.

This chronicle, and many other relicks of antiquity, real or pretended, were purchaſed in Aſia Minor, in Greece, or in the iſlands of the Archipelago, by Mr William Petty, who in the year 1624 was ſent by Thomas

Arundelian.

Thomas earl of Arundel for the purpoſe of making ſuch collections for him in the eaſt. They were brought into England about the beginning of the year 1619, and placed in the gardens belonging to Arundel houſe in London.

Soon after their arrival they excited a general curioſity, and were viewed by many inquiſitive and learned men; among others by Sir Robert Cotton, who prevailed upon Selden to employ his abilities in explaining the Greek inſcriptions. Selden and two of his friends, Patrick Young, or, as he ſtyled himſelf in Latin, *Patricius Junius*, and Richard James, immediately commenced their operations, by cleaning and examining the marble containing the Smyrnean and Magneſian league, and afterwards proceeded to the Parian chronicle. The following year Selden publiſhed a ſmall volume in quarto, including about 39 inſcriptions copied from the marbles.

In the turbulent reign of Charles I. and the ſubſequent uſurpation, Arundel houſe was often deſerted by the illuſtrious owners; and, in their abſence, ſome of the marbles were defaced and broken, and others either ſtolen or uſed for the ordinary purpoſes of architecture. The chronological marble in particular, was unfortunately broken and defaced. The upper part, containing 31 epochas, is ſaid to have been worked up in repairing a chimney in Arundel houſe.

In the year 1667, the Hon. Henry Howard, afterwards duke of Norfolk, the grandſon of the firſt collector, preſented theſe ſuppoſed remains of antiquity to the univerſity of Oxford.

Selden's work becoming very ſcarce, Biſhop Fell engaged Mr Prideaux to publiſh a new edition of the inſcriptions, which was printed at Oxford in 1676. In 1732 Mr Maittaire obliged the public with a more comprehenſive view of the marbles than either of his predeceſſors. Laſtly, Dr Chandler publiſhed a new and improved copy of the marbles in 1763, in which he corrected the miſtakes of the former editors; and in ſome of the inſcriptions, particularly that of the Parian chronicle, ſupplied the *lacunæ* by many ingenious conjectures.

The Arundelian marbles have generally been regarded as a curious monument of antiquity. They were, however, diſcovered in ſome inſtances to be inconſiſtent with the moſt authentic hiſtorical accounts; Sir Iſaac Newton and ſeveral other modern philoſophers paid little or no regard to them; and of late their abſolute authenticity has been ſeverely queſtioned in an expreſs diſſertation upon the ſubject, entitled *The Parian Chronicle*. In this diſſertation much ingenuity as well as judgment, and a great extent of ancient learning, are diſplayed. His doubts, the author obſerves, ariſe from the following conſiderations.

I. "The characters have no certain or unequivocal marks of antiquity." The Π and Z, which frequently occur in the form ſuppoſed to be the moſt ancient (viz. the perpendicular line of the Π on the right hand only half as long as that on the left, and the Z in the form of a proſtrate Ξ), are ſo well known, that any modern fabricator of a Greek inſcription, which he intends to impoſe upon the world as a relick of antiquity, would moſt probably uſe them in preference to the more common and ordinary forms. But the letters in the Parian chronicle have no appearance of antiquity except this very equivocal one. They do not in the leaſt reſemble the Sigean, the Nemean, or the Delian inſcriptions, which are ſuppoſed to be of a more ancient date. They differ in many reſpects from the letters on the Marmor Sandvicenſe, which, according to the learned editor of that inſcription, was engraved in the year before Chriſt 374. They have no ſort of reſemblance to the characters on the Laconian pillars, to thoſe of the Alexandrian manuſcript, or others of a later date. They ſeem, continues our author, to reſemble perhaps more than any other the letters of the alphabet taken by Montfaucon from the Marmor Cyzicenum at Venice. They are plain and ſimple in their form, and ſuch as an ordinary ſtonecutter of the preſent age would probably make, if he were employed to engrave a Greek inſcription according to the alphabet now in uſe. The ſmall letters intermixed among the larger have, in the opinion of our author, an air of affectation and artifice, rather than genuine antiquity; and he is perſuaded, that the antiquity of an inſcription can never be proved by the mere form of the letters, becauſe the moſt ancient characters may be as eaſily counterfeited as thoſe which compoſe our preſent alphabets.

That the learned reader may form a competent idea of the characters in the Parian chronicle, the author has compared them with thoſe of other inſcriptions, and given what is uſually termed a *fac ſimile*.

In regard to ſeveral *archaiſms*, as they are called, in this chronicle, and which our author ſpecifies, he contends, that no concluſion can be drawn from them in favour of its antiquity. What reaſon could there be, he aſks, for introducing theſe into the Parian chronicle? We do not uſually find them in Greek writers of the ſame age, or even in thoſe of the moſt early date. The reign of Ptolemy Philadelphus, with the 21ſt year of which the date of the chronicle coincides, was not an age of rude antiquity with reſpect to the Greek language; being only 150 years after the time of Xenophon and Plato, when the Greek was ſpoken and written in its utmoſt purity and elegance: and we can ſcarcely ſuppoſe, that even a ſtonecutter, in that refined age, would have been permitted to diſgrace a ſuperb and learned monument with ſuch barbariſms as occur in the chronicle. The archaiſms, however, he remarks, are not uniformly obſerved in this inſcription. He adduces ſix inſtances of deviation; and adds, he is almoſt tempted to ſuſpect, that ἐμ Πεζῳ, ἐμ Μαζαλῶνι, and other pretended archaiſms, are owing to a mere affectation of antiquity, or to a corrupted dialect and pronunciation in later ages. Thoſe archaiſms, our author acknowledges, appear on other marbles: but he thinks, that, for that very reaſon, they would naturally be adopted by the fabricator of a ſuppoſititious inſcription; and the authenticity of thoſe inſcriptions in which they appear muſt be eſtabliſhed before they can be urged in oppoſition to the preſent argument.

II. "It is not probable that the chronicle was engraved for *private uſe*."—Our author thinks it an impoſſible ſuppoſition that ſuch an expenſive and cumberſome work could have been executed by a private citizen, either for his own amuſement, or for the benefit of his fellow citizens. In the firſt place, a long inſcription could not be engraved in marble without ſuch an expence as few learned Greeks were able to afford.

Arundelian. Or, if its author, by an uncommon felicity, was able to erect ſuch a literary monument, the ſcheme would have been uſeleſs and imprudent; as all the contents of the inſcription might have been publiſhed more commodiouſly and effectually by the common mode of writing in uſe at that time.

A variety of arguments is adduced, illuſtrating the ſuperiority of a manuſcript to ſuch an inſcription as the chronicle, in a number of reſpects; and enforcing the improbability of its having ever been executed, either for public or private uſe. Much evidence from ancient hiſtory is likewiſe produced in ſupport of the aſſertion, that the common mode of writing, in the reign of Ptolemy Philadelphus, was not on ſtones. It is not, however, neceſſary to prove, by the teſtimony of ancient authors, that books were written on parchment, or paper made of the Egyptian papyrus, or any ſuch materials, before the date of the Parian chronicle. This is ſufficiently evinced by the very exiſtence of the writings of Moſes, David, Solomon, and the Jewiſh prophets; the works of Homer, Heſiod, Anacreon, Pindar, Æſchylus, Sophocles, Euripides, Herodotus, Hippocrates, Ariſtophanes, Thucydides, Xenophon, Plato, Demoſthenes, Ariſtotle, &c.: And it is ſtill more inconteſtably proved by the libraries which were collected in preceding ages, or about that time; ſuch as thoſe of Polycrates in Samos, Piſiſtratus and Euclides at Athens, Nicocrates in Cyprus, Euripides the poet, Ariſtotle the philoſopher, Clearchus at Heraclea Pontica, and the moſt extenſive and magnificent library of Ptolemy Philadelphus in Egypt, founded in or before the year 284, which in his time is ſaid to have contained 100,000 volumes, and to have been enlarged by his ſucceſſors to the amount of almoſt 600,000. Not long afterwards a library was founded at Pergamus by Attalus and Eumenes, which, according to Plutarch, contained 200,000. Theſe are clear and deciſive proofs that the common mode of writing in the time of Ptolemy Philadelphus was not on ſtones.

III. "The chronicle does not appear to have been engraved by *public authority*."

1. The firſt argument in ſupport of this opinion is, that inſcriptions of that kind uſually begin with a particular form; as, Η ΒΟΥΛΗ ΚΑΙ Ο ΔΗΜΟΣ, 'The ſenate and the people;' or thus, ΕΔΟΞΕΝ ΤΗΙ ΒΟΥΛΗΙ ΚΑΙ ΤΟΙ ΔΗΜΩΙ, 'It pleaſed the ſenate and the people, &c.' But the Parian chronicle begins in the manner of a private man, ſpeaking of his own performance in the firſt perſon ſingular. This argument, our author remarks, cannot be much affected by obſerving, that the beginning of the inſcription is obliterated; for it is neceſſarily implied by the words now remaining.

2. The facts and dates, which are mentioned in this chronicle, do not appear to have been extracted from any public records, or calculated to anſwer the purpoſe of authentic documents; as many eminent princes and magiſtrates are paſſed over without notice; in ſeveral inſtances, the tranſactions of whole centuries are omitted; and the facts, chiefly ſpecified, are not matters of general or national importance.

3. The Parian inſcription is ſuch a one as we can hardly ſuppoſe the magiſtrates or the people of Paros would have ordered to be engraved. Stately ſepulchres, pillars, triumphal arches, and the like, were erected to perpetuate the glory of eminent men. The remembrance of events in which nations were intereſted, the ſucceſſion of princes, &c. were preſerved in the ſame manner. Leagues, decrees, and laws, were likewiſe engraved on marble or braſs, and fixed to a pillar, the walls of a temple, or other public buildings; becauſe ſuch inſcriptions were deſigned for the inſpection of the people, as they eſſentially concerned their conduct, their property, their liberty, or their lives. But, our author aſks, for whom could the chronicle of Paros be intended? It contains no encomiums of any of the patriots, the heroes, or the demigods of the country, no decrees of the magiſtrates, no public records, no laws of ſtate. On the contrary, it is a work of mere ſpeculation and learning, in which the inhabitants of that iſland, eſpecially the common people, had not the leaſt intereſt or concern. Arundelian.

Theſe words at the beginning, ἀρχοντος ἐν Πάρῳ, would naturally lead us to ſuppoſe, that the inſcription related to Paros. And, if ſo, it would have been natural for the author to have mentioned ſome of the moſt important occurrences in the hiſtory of that iſland. But, ſays this acute and learned critic, what ſcheme does our chronologer purſue on this occaſion? Does he record the events and revolutions of his own country? Does he mention any of the battles, ſieges, and treaties of the Parians? any of their public inſtitutions? any of their poets, patriots, or warriors? Does he mention Archilochus, who was honoured by his countrymen, and diſtinguiſhed as a poet in a general aſſembly of the Greeks? Not a ſyllable on any of theſe ſubjects! On the contrary, he rambles from place to place, and records the tranſactions of Athens, Corinth, Macedon, Lydia, Crete, Cyprus, Sicily, Perſia, and other foreign countries with which Paros had no connexion.

In this view the inſcription ſeems to have been as impertinent in the iſland of Paros, as a marble monument would be in this country, recording the antiquities of France or Spain; or one in Jamaica recording the revolutions of England. But upon ſuppoſition that the inſcription is a forgery, it is eaſy to account for this extraordinary circumſtance. A few chronological occurrences in the ancient hiſtory of Paros would not have been ſo intereſting to the generality of readers, or ſo valuable in the eſtimation of every lover of antiquities, or, in ſhort, ſo profitable to the compiler, as a general ſyſtem of Grecian chronology.

IV. "The Greek and Roman writers, for a long time after the date of this work, complain that they had no chronological account of the affairs of ancient Greece." This poſition is confirmed by the teſtimony of Julius Africanus, Juſtin Martyr, Plutarch, Joſephus, Varro, Diodorus Siculus, and others; and the following ſeries of interrogatories is ſubjoined: "Thucydides, I know, lived 140 years before the chronicle is ſaid to have been written; but if Thucydides, as well as other writers, complained that there was nothing but uncertainty in the earlier period of Grecian hiſtory, from whence can we ſuppoſe the author of this inſcription collected ſuch a clear, determinate, and comprehenſive ſyſtem of chronology? If he had any ſources of information, which were unknown to ſucceeding writers, how happens it, that they ſhould all of them overlook this moſt conſiderable, moſt exact, moſt creditable author?

Arundelian.

thor? Why did they omit this ancient account of their early ages? Why did they not copy his moſt memorable epochas? Why did they not produce his authority? or at leaſt, why did they not mention his opinion? Surely nothing, to all appearance, could be more elaborate, more important, or of higher authority, than a chronological table, which was thought worthy of being engraved on marble.

V. "The chronicle is not once mentioned by any writers of antiquity. This, indeed, appears a ſtrong argument againſt its authenticity. Apollodorus, an Athenian, the diſciple of Ariſtarchus the grammarian, and Demetrius the philoſopher, wrote a genealogical and hiſtorical work on the early ages of Greece; but, though compoſed 120 years after the date of the Parian chronicle, it does not contain the ſmalleſt traces of a ſyſtematical chronology. It is remarkable too that the chronicle of Apollodorus is quoted by Diodorus Siculus, Strabo, Plutarch, A. Gellius, Lucian, and many other writers of antiquity; while the Parian chronicle, which comprehends a more extenſive period, is entirely unnoticed. It contains, however, ſuch wonderful diſcoveries in ancient hiſtory, that if it had exiſted 264 years before the Chriſtian era, it muſt have excited a general attention, and been referred to as an authority by writers of ſucceeding times. But we do no find, in any author of antiquity, either poet or hiſtorian, geographer or chronologer, mythologiſt or ſcholiaſt, the moſt diſtant alluſion to the Parian chronicle; though it was ſuch a common practice among the ancients to mention the works of their predeceſſors, that in many books we find references and alluſions to three, four, five, ſix, or ſeven hundred different authors of every denomination.

VI. "Some of the facts mentioned in the chronicle ſeem to have been taken from writers of a later date." Our inquirer collates ſeveral paſſages in the Parian chronicle with parallel paſſages in Greek authors, to evince that there is, in the former, an appearance of imitation, or a ſtronger reſemblance than ſuch as may be ſuppoſed to ariſe from accident; that there are likewiſe ſome improbabilities attending the account of Deucalion, as related in the Parian chronicle; and that the names of ſix, and, if the lacunæ are properly ſupplied, the names of 12 cities appear to have been engraved on the marble, exactly as we find them in Ælian's Various Hiſtory. But there is not, our author obſerves, any imaginable reaſon for this particular arrangement. It does not correſpond with the time of their foundation, with their ſituation in Ionia, with their relative importance, or with the order in which they are placed by other eminent hiſtorians. The argument by which our author endeavours to prove that the Parian chronicle has, in this inſtance, copied Ælian's Various Hiſtory, ſeems deciſive of the fact. He obſerves, that ſix names may be tranſpoſed 720 different ways: and that 12 names admit of 479,001,600 different tranſpoſitions. Suppoſing then, that there is no particular reaſon for one arrangement rather than another, it will follow, that the chance of two authors, placing them in the ſame order, is, in the former caſe, as 1 to 720; and in the latter as 1 to 479,001,600. It is therefore, ſays he, utterly improbable, that theſe names ſhould have been placed in this order on the marble, if the author of the inſcription had not tranſcribed them from the hiſtorian."

It may indeed be urged, with regard to this ſimilarity of arrangement in the Parian chronicle and Ælian's Various Hiſtory, that the inference might be the very reverſe of that which is ſpecified by our author. But that Ælian ſhould have been the Parian chronicle, without once mentioning it: or that he ſhould have exactly copied a liſt of towns, arranged neither according to chronological or topographical order, is indeed a ſuppoſition equally improbable with the other.

Arundelian.

VII. "Paralipomenas appear in ſome of the epochas, which we can ſcarcely ſuppoſe a Greek chronologer in the 129th Olympiad would be liable to commit." After ſpecifying theſe, our inquirer aſks, "Would a writer of reputation and learning, in one of the moſt poliſhed and enlightened eras of ancient Greece, commit ſuch miſtakes in oppoſition to the poſitive atteſtations of the moſt accurate hiſtorians, in events of public notoriety? Would a private citizen, or a magiſtrate of Paros, order a crude and inaccurate ſeries of epochas to be engraved, at a great expence, and tranſmitted to poſterity on a marble monument? It is hardly probable.

VIII. "The hiſtory of the diſcovery of the Parian chronicle is obſcure and unſatisfactory." Our author obſerves, that it is attended with ſome ſuſpicious circumſtances, and without any of thoſe clear and unequivocal evidences which always diſcriminate truth from falſehood. There are no data in the inſcription by which to diſcover the place where the marble was erected. The place likewiſe where it was found is not aſcertained; though the generality of writers who have had occaſion to mention it have ſuppoſed that it was found in the iſland of Paros. If it was erected at Smyrna, as ſome imagine, our author aſks for what purpoſe does the writer mention Aſtyanax the archon of Paros, and not one circumſtance relative to Smyrna? If, adds he, it was erected at Paros, why does he not mention more archons of that city than one? or how ſhall we account for his profound ſilence with reſpect to all the events and revolutions which muſt have happened in that iſland, and have been infinitely more intereſting to the natives than the tranſactions of any foreign country?

The train of circumſtances by which the Parian chronicle came into the poſſeſſion of Mr Petty, whom Lord Arundel had ſent into the eaſt for the purpoſe of collecting antiquities, as well as the ſubſequent conduct of Peireſc its former owner, affords our author a ſtrong preſumption, that "the inſcription was actually fabricated, with the view of obtaining for it a high price, upon the pretence that it was a relick of great antiquity. It is certain, that there is ſomething myſterious in the conduct of the firſt oſtenſible proprietors. Theſe marbles had been totally unknown, or unnoticed, for almoſt 1900 years, and at laſt are dug out of the ground—nobody can tell us when or where!"

IX. "The literary world has been frequently impoſed upon by ſpurious books and inſcriptions, and therefore we ſhould be extremely cautious with regard to what we receive under the venerable name of antiquity." This propoſition is illuſtrated by a great variety

Arundelian marbles. Arufini.

riety of examples, and very properly expoſes the forgeries which have diſgraced the republic of letters in different ages; and although one of the more recent ones cited, namely Oſſian's poems, be a point very far indeed from being eſtabliſhed, yet that deceptions of this kind have been practiſed is an unqueſtionable fact.

In endeavouring, towards the end of his diſſertation to inveſtigate the time of the ſuppoſed forgery, he obſerves, that the 16th century, and the prior part of the 17th, produced a multitude of grammarians, critics, and commentators, deeply verſed in Grecian literature, and amply qualified for the compilation of ſuch a chronological ſyſtem as that of the Arundelian marbles. Above all, the ſcience of chronology was particularly ſtudied and inveſtigated about that time; "Nunc fervet chronologia," ſays Scaliger in the year 1605, "omnes hoc ferrum excalfaciunt." Caſaubon treats thoſe perſons with contempt who were unacquainted with the improvements which had been made in that department of learning after the revival of letters. Innumerable ſyſtems of chronology had been publiſhed before the year 1625: from which it was eaſy to extract a ſeries of memorable events, and give the compilation a Grecian dreſs. "The avidity," ſays our author, "with which all relicks of antiquity were then collected, and the high price at which they were purchaſed, were ſufficient inducements to any one, whoſe avarice or whoſe neceſſity was ſtronger than his integrity, to engrave his labours on marble, and tranſmit them to Smyrna, as a commodious emporium for ſuch rarities."

The preciſe period of the fabrication, however, muſt ſtill be reckoned apocryphal and uncertain. The ſum of fifty guineas, which Peireſc gave to the ſuppoſed fabricator, was inadequate to ſuch a laborious and expenſive work. Upon the whole, perhaps, it would be too haſty to pronounce deciſively that this famous chronicle, ſo long reſpected, is an impoſition upon the public. It may, however, be ſafely affirmed, that the ſuſpicions againſt it are extremely ſtrong, and the objections already cited of a nature very difficult to be removed. No attempts have yet been made with this view: But under ſome future article, as CHRONOLOGY, MARBLES, or PARIAN *Chronicle*, we may poſſibly have an opportunity of reſuming the ſubject with additional information.

ARUNDO, the REED. See BOTANY *Index*.

ARUSINI CAMPI (erroneouſly written *Taurafini* by Cluverius), plains in Lucania, famous for the laſt battle fought between the Romans and Pyrrhus. That prince being at Tarentum, and hearing that the two new conſuls Curius Dentatus and Cornelius Lentulus had divided their forces, the one including Lucania and the other Samnium; he likewiſe divided a choſen detachment of his army into two bodies, marching with his Epirots againſt Dentatus, in hopes of ſurpriſing him in his camp near Beneventum. But the conſul having notice of his approach, marched out of his intrenchments with a ſtrong detachment of legionaries to meet him, repulſed his vanguard, put many of the Epirots to the ſword, and took ſome of their elephants. Curius, encouraged by this ſucceſs, marched into the Aruſian fields, and drew up his army in a plain, which was wide enough for his troops, but too narrow for the Epirot phalanx to act with its full effect. But the king's eagerneſs to try his ſtrength and ſkill with ſo renowned a commander, ſtimulated him to engage at that great diſadvantage. Upon the firſt ſignal the action began; and one of the king's wings giving way, victory ſeemed to incline to the Romans. But that wing where the king fought in perſon repulſed the enemy and drove them to their intrenchments. This advantage was in great part owing to the elephants; a circumſtance which Curius perceiving, commanded a body of reſerve, which he had poſted near the camp, to advance and attack thoſe animals with burning torches; which frightened and annoyed them to ſuch a degree, that they wheeled about, broke into the phalanx, and put that body into the utmoſt diſorder. The Romans taking advantage of this confuſion, charged with ſuch fury that the enemy were entirely broken and defeated. Pyrrhus retired to Tarentum, attended only by a ſmall body of horſe, leaving the Romans in full poſſeſſion of his camp; which they ſo much admired, that they made it a model which they followed ever after.

Aruſpices Arx.

ARUSPICES, or HARUSPICES, in *Roman Antiquity*, an order of prieſts who pretended to foretel future events by inſpecting the entrails of victims killed in ſacrifice; they were alſo conſulted on occaſion of portents and prodigies. The haruſpices were always choſen from the beſt families; and as their employment was of the ſame nature as that of the augurs, they were as much honoured. Their college, as well as thoſe of the other religious orders, had its particular regiſters and records.

ARX, in the *Ancient Military Art*, a town, fort, or caſtle, for defence of a place.

The arx in ancient Rome was a diſtinct edifice from the capitol, though ſome have confounded the two. According to Ryckius, the arx, properly ſpeaking, was a place on the higheſt part of the Capitoline mount, ſtronger and better fortified than the reſt, with towers and pinnated walls: in which was alſo the temple of Jupiter Capitolinus.

ARX alſo denotes a conſecrated place on the Palatine mount, where the augurs publicly performed their office. Some will have the arx to have been the augural temple; but Varro expreſsly diſtinguiſhes between the two.

ARX was particularly uſed for a public place in Rome, ſet apart for the operations of the augurs. In which ſenſe arx amounts to the ſame with what is otherwiſe called *auguraculum* and *auguratorium*, and in the camp *augurale*. Out of this arx it was that the *feciales*, or heralds, gathered the graſs uſed in the ceremony of making leagues and treaties.

ARX Britannica, a citadel of Batavia, whoſe foundation is ſeen at low water, near the old mouth of the middle Rhine: ſome imagine it the pharos or high tower of Caligula, as Suetonius calls it; a monument of Caligula's ſham conqueſt of Britain. Others, that it was built by Druſus, with an altar afterwards by Claudius, on his expedition into Britain. But the uſual paſſage was from Geſſoriacum; and Suetonius expreſsly ſays, Claudius paſſed over thence. The ancient name of this citadel, now covered by the ſea, is nowhere expreſſed: Now commonly called *t'Huis Britten*, or *Brittenburg*; that is, *Arx Britannica*; but from what authority does not appear.

Arytenoides ‖ Asa.

ARYTENOIDES, in *Anatomy*, the name of two cartilages which, together with others, conſtitute the head of the larynx. It is alſo applied to ſome muſcles of the larynx.

ARYTHMUS, in *Medicine*, the want of a juſt modulation in the pulſe. It is oppoſed to *eurythmus*, a pulſe modulated agreeably to nature.

ARZILLA, a very ancient maritime town of Africa, in the kingdom of Fez, about five leagues from Tangiers. It is built at the mouth of a river, and inhabited by Moors and Jews, who carry on no trade. It was formerly a Roman colony; afterwards fell under the government of the Goths; and was next taken by the Mahometans. Alphonſo of Portugal, ſurnamed the African, took it by aſſault in 1471, and brought away the preſumptive heir of the crown. After that prince came to the throne, he beſieged it, in 1508, with 100,000 men; but was obliged to abandon the undertaking. However, at length the Portugueſe forſook it of their own accord. W. Long. 5. 30. N. Lat. 35. 30.

AS, in antiquity, a particular weight, conſiſting of 12 ounces; being the ſame with *libra*, or the Roman pound. The word is derived from the Greek *ας*, which in the Doric dialect is uſed for *ας*, *one*, q. d. an entire thing; though others will have it named *as* quaſi *æs*, becauſe made of baſs.

As was alſo the name of a Roman coin, which was of different weights and different matter in different ages of the commonwealth. Under Numa Pompilius, according to Euſebius, the Roman money was either of wood, leather, or ſhells. In the time of Tullus Hoſtilius, it was of braſs; and called *as*, *libra*, *libella*, or *pondo*, becauſe actually weighing a pound or 12 ounces. Four hundred and twenty years after, the firſt Punic war having exhauſted the treaſury, they reduced the *as* to two ounces. In the ſecond Punic war, Hannibal preſſing very hard upon them, they reduced the *as* to half its weight, viz. to one ounce. And, laſtly, by the Papirian law, they took away half an ounce more, and conſequently reduced the *as* to the diminutive weight of half an ounce: and it is generally thought that it continued the ſame during the commonwealth, and even till the reign of Veſpaſian. The *as* therefore was of four different weights in the commonwealth. Its original ſtamp was that of a ſheep, ox, or ſow: but from the time of the emperors, it had on one ſide a Janus with two faces, and on the reverſe the roſtrum or prow of a ſhip.

As was alſo uſed to denote any integer or whole. Whence the Engliſh word *ace*. Thus *as* ſignified the whole inheritance; whence *hæres ex aſſe*, the heir to the whole eſtate.

ASA, king of Judah, ſucceeded his father Abijam. He pulled down the altars erected to idols, reſtored the worſhip of the true God, and, with the aſſiſtance of Benhadad king of Syria, took ſeveral towns from the king of Iſrael. He died 917 years before the Chriſtian era, and was ſucceeded by Jehoſhaphat.

Asa, among naturaliſts. The writers of the later ages have formed this word *aſa* from the *laſar* of the ancients, and attributed it to a gum very different from that anciently known by the name they have thus corrupted.

The aſa of the ancients was an odoriferous and fragrant gum; and the aſa of the after ages had ſo little title to this epithet, that they diſtinguiſhed it by one, expreſſing its being of an offenſive or ſtinking ſmell. The Arabian writers, according to this diſtinction, deſcribe two kinds of aſa, the one ſtinking, the other aromatic; and the modern Greeks preſerved the name *aſa*, or *laſar*, to the ſtinking gum the Latins called by that name, but added a diſtinctive epithet to expreſs its ſmell, and called it *ſcardolaſarum*.

Asa or Assa, in the *Materia Medica*, a name given to two very different ſubſtances, called *aſa-dulcis* and *aſa fœtida*.

Asa Dulcis is the ſame with Benzoin.

Asa-Fœtida is the concrete juice of an umbelliferous plant growing in ſeveral parts of Aſia. See Ferula, Botany and Materia Medica *Index*.

ASAPH, St, a city in Denbighſhire, with a biſhop's ſee; on which account principally it deſerves notice, being in itſelf but a poor place. As a biſhoprick, it is of great antiquity, and was founded about the year 560, by Kentigern, a Scotſman, biſhop of Glaſgow. He began the church on the banks of the river Elwy, whence it is called by the Welſh *Land Elwy*, and in Latin *Elwenſis*. Kentigern returning into Scotland, left a holy man his ſucceſſor, St Aſaph. Who was his ſucceſſor is uncertain, as there are no records that mention it; and it ſeems rather probable that the religious ſettled here had been neceſſitated to remove to ſome more peaceable abode, as the country was frequently the ſeat of war between the Engliſh and the Welſh. This ſee was formerly a very wealthy one; but its revenues were greatly leſſened by the profuſion of Biſhop Parſew, who alienated much of the lands belonging to this biſhoprick.

This dioceſe doth not contain any one whole county; but conſiſts of part of Denbigh, Flint (where its church is), Montgomery, and Merioneth ſhires, and a ſmall part of Shropſhire; wherein are 121 pariſhes, and 131 churches and chapels, moſt of which are in the immediate patronage of the biſhop. This ſee hath but one archdeaconry, viz. that of St Aſaph, which is united to the biſhoprick, for the better maintenance thereof. This ſee is valued in the king's books at 187l. 11s. 6d. but computed to be worth annually 1500l. The tenth of the clergy comes to 186l. 19s. 6½d. To this cathedral belong a biſhop, a dean, archdeacon, chancellor, &c.

ASAPPES, or Azapes, an order of ſoldiers in the Turkiſh army, whom they always expoſe to the firſt ſhock of the enemy: to the end that the enemy being thus fatigued, and their ſwords blunted, the ſpahis and janizaries may fall on and find an eaſy conqueſt. The word is derived from the Turkiſh *ſaph*, which ſignifies *rank*, from whence they have formed *aſphaph*, "to range in battle. The aſappes are ſaid to be held of ſo little value, that they frequently ſerve as bridges for the cavalry to paſs over in bad roads, and as faſcines to fill up the ditches of places beſieged. They travel on foot, and have no pay but the plunder they can get from the enemy.

ASAR-addon, or Esar-Haddon, the ſon of Sennacherib, ſucceeded his father about 712 years before the Chriſtian era, and united the kingdoms of Nineveh and Babylon. He rendered himſelf maſter of Syria; ſent a colony to Samaria; and his generals took

King

Aſarina ‖ Aſbeſtos.

King Manaſſes, and carried him loaded with chains to Babylon. Aſar-Addon died after a reign of 12 years.

ASARINA. See CHELONE.

ASAROTA, ασαρωτα, from α and σαιρω, *I ſweep*, a kind of painted pavements in uſe before the invention of moſaic work. The moſt celebrated was that at Pergamus, painted by Seſus, and exhibiting the appearance of crumbs, as if the floor had not been ſwept after dinner, whence, according to Pliny, the denomination. Perrault ſuppoſes them to have been a black kind of pavements of a ſpongy matter.

ASARUM, ASARABACCA. See BOTANY *Index*.

ASBAMEA, a fountain of Cappadocia, near Tyana, ſacred to Jupiter, and to an oath. Though this fountain bubbled up, as in a ſtate of boiling, yet its water was cold, and never ran over, but fell back again: (Philoſtratus, Ammian).

ASBESTOS, a native foſſil ſtone, which may be ſplit into threads and filaments, from one inch to ten inches in length, very fine, brittle, yet ſomewhat flexible, ſilky, and of a grayiſh colour, not unlike talc of Venice. It is almoſt inſipid to the taſte, inſoluble in water, and poſſeſſes the wonderful property of remaining unconſumed in the fire, which only whitens it.

The induſtry of mankind has found a method of working this mineral, and employing it in divers manufactures, chiefly cloth and paper. The manufacture is undoubtedly difficult enough. Pliny calls the aſbeſtos *inventu rarum, textu difficillimum*. Wormius aſſures us, that the method of making cloth of aſbeſtos is now entirely unknown. And indeed one would ſcarcely imagine the thing practicable, without the mixture of ſome other pliant matter, as wool, hemp, or flax, along with the aſbeſtos, the filaments of this latter appearing too coarſe and brittle to make any tolerable fine work. However this be, Bapt. Porta aſſures us, that in his time the ſpinning of aſbeſtos was a thing known to everybody at Venice. Sig. Caſtagnatta, ſuperintendant of ſome mines in Italy, is ſaid to have carried the manufacture to ſuch perfection, that his aſbeſtos was ſoft and tractable, much reſembling lamb ſkin dreſſed white: he could thicken and thin it at pleaſure, and thus either make it into a very white ſkin or a very white paper.

This kind of linen cloth was chiefly eſteemed by the ancients; though then better known and more common than among us, being held equally precious with the richeſt pearls: nor is it now of mean value, even in the country where it is moſt generally made, a China cover (i. e. a piece of 23 inches and three-quarters long) being worth 80 tale, i. e. 36l. 13s. 4d. Pliny ſays, he himſelf had ſeen napkins thereof, which, being taken foul from the table after a feaſt, were thrown into the fire, and by that means were better ſcoured than if they had been waſhed in water, &c. But its principal uſe, according to Pliny, was for the making of ſhrouds, for royal funerals, to wrap up the corpſe, ſo that the aſhes might be preſerved diſtinct from thoſe of the wood, &c. whereof the funeral pile was compoſed: and the princes of Tartary, according to the accounts in the Philoſophical Tranſactions, ſtill uſe it at this day in burning their dead. Some of the ancients are ſaid to have made themſelves clothes of it, particularly the Brachmans among the Indians. The wicks for their perpetual lamps, according to Dr Liſter, were alſo made of it: ſome to this day uſe it for the wicks of ſuch lamps as they would not have any trouble with; becauſe the aſbeſtos never waſting, there is no occaſion for ſhifting the wick. Septalla, canon of Milan, had thread, ropes, nets, and paper, made of the aſbeſtos. A handkerchief or pattern of the linen was long ſince preſented to the Royal Society, a foot long and half a foot broad. This gave two proofs of its reſiſting fire; though, in both experiments, it loſt above three drachms of its weight. When taken out red hot, it did not burn a piece of white paper on which it was laid. Mr Villette pretends that his large burning concave uſually vitrifies the aſbeſtos.

Aſbeſtos ‖ Aſcendant.

The method of preparing the incombuſtible paper and cloth is thus deſcribed by Ciampini: The ſtone is laid to ſoak in warm water; then opened and divided by the hands, that the earthy matter may be waſhed out. The ablution being ſeveral times repeated, the flaxlike filaments are collected and dried; and they are moſt conveniently ſpun with an addition of flax. Two or three filaments of the aſbeſtos are eaſily twiſted along with the flaxen thread, if the operator's fingers are kept oiled. The cloth alſo, when woven, is beſt preſerved by oil from breaking or waſting. On expoſure to the fire, the flax and the oil burn out, and the cloth remains pure and white. Probably from the diſſipation of ſome extraneous matter of this kind proceeded the diminution of weight in the handkerchief juſt recited; for pure aſbeſtos leaves nothing. The ſhorter filaments which ſeparate in waſhing the ſtone may be made into paper in the common manner.

The aſbeſtos is found in Crete and Cyprus; in Tartary; at Namur in the Low Countries; in Thuringia among the mines; in the old Noricum; in Egypt; in the mountains of Arcadia; at Puteoli; in the iſland of Corſica; in the iſland of Angleſey in Wales; in Aberdeenſhire in Scotland; at Montauban in France; and in Siberia.

ASCALON, an ancient city, and one of the five ſatrapies or principalities of the Philiſtines; ſituated on the Mediterranean, 43 miles to the ſouth-weſt of Jeruſalem (Antonine), between Azotus to the north and Gaza to the ſouth. The birthplace of Herod the Great, thence ſurnamed *Aſcalonita* (Stephanus). Famous for its ſcallions, which take name from this town (Strabo, Pliny). Now *Scalona*. E. Long. 34. 30. Lat. 31. 30.

ASCANIUS, the ſon of Æneas and Creuſa, ſucceeded his father in the kingdom of the Latins, and defeated Mezentius king of the Tuſcans, who had refuſed to conclude a peace with him. At length he founded Alba Longa; and died about 1139 years before the Chriſtian era, after a reign of 38 years.

ASCARIS. See HELMINTHOLOGY *Index*.

ASCENDANT, in *Aſtrology*, denotes the horoſcope, or the degree of the ecliptic which riſes upon the horizon at the time of the birth of any one. This is ſuppoſed to have an influence on the perſon's life and fortune, by giving him a bent and propenſity to one thing more than another.

In the celeſtial theme, this is alſo called the *firſt houſe*, the *angle of the Eaſt* or *Oriental angle*, and the *ſignificator of life*. Such a planet ruled in his *aſcendant*: Jupiter was in his *aſcendant*, &c. Hence the word is alſo uſed in a moral ſenſe, for a certain ſuperiority

which

Aſcendants || Aſcenſion Iſland.

which one man has over another, from ſome unknown cauſe.

ASCENDANTS, in *Law*, are oppoſed to deſcendants in ſucceſſion; i. e. when a father ſucceeds his ſon, or an uncle his nephew, &c. heritage is ſaid to aſcend, or go to aſcendants.

ASCENDING, in *Aſtronomy*, is ſaid of ſuch ſtars as are riſing above the horizon in any parallel of the equator.

Ascending Latitude, is the latitude of a planet when going towards the north pole.

Ascending Node, is that point of a planet's orbit, wherein it paſſes the ecliptic, to proceed northward. This is otherwiſe called the *northern node*, and repreſented by this character ☊.

Ascending Veſſels, in *Anatomy*, thoſe which carry the blood upwards; as the aorta aſcendens. See ANATOMY.

ASCENSION, in *Aſtronomy*, is either right or oblique. Right aſcenſion of the ſun, or a ſtar, is that degree of the equinoctial, counted from the beginning of Aries, which riſes with the ſun or ſtar in a right ſphere. Oblique aſcenſion is an arch of the equator intercepted between the firſt point of Aries and that point of the equator which riſes together with a ſtar in an oblique ſphere.

Ascension Day, a feſtival of the Chriſtian church, held ten days before Whitſuntide, in memory of our Saviour's aſcenſion into heaven after his reſurrection.

Ascension Iſland, a barren iſland on the coaſt of Africa, lying in W. Long. 14°. 22′. 31″. S. Lat. 7°. 56′. The following account is given of it by Mr Forſter. "This iſland was firſt diſcovered in 1501, by Joaõ de Nova Galego, a Portugueſe navigator, who named it *Ilha de Noſſa Senhora de Conceiçao*. The ſame admiral on his return to Portugal in 1502, diſcovered the iſland of St Helena, which obtained that name from the day of the diſcovery. Aſcenſion was ſeen a ſecond time by Alfonſo d'Albuquerque on his voyage to India in 1503, and then received the name it now bears; but was already at that time in the ſame deſolate condition as at preſent. We ſent ſeveral parties on ſhore, who paſſed the night on the watch for turtles, which came to lay their eggs on the ſandy ſhores. The drearineſs of this iſland ſurpaſſed all the horrors of Eaſter iſland and Terra del Fuego, even without the aſſiſtance of ſnow. It was a ruinous heap of rocks, many of which, as far as we could diſcern from the ſhip, ſeemed to be totally changed by the fire of a volcano. Nearly in the centre of the iſland riſes a broad white mountain of great height, on which we diſcerned ſome verdure by the help of our glaſſes, from whence it has obtained the name of *Green Mountain*.

"We landed early in the morning among ſome rocks, the ſurf being always immenſely high on the great beach; which conſiſts of minute ſhell-ſand, chiefly of a ſnowy white, very deep, dry, and intolerable to the eyes when the ſun ſhines. We aſcended among heaps of black cavernous ſtone, which perfectly reſembles the moſt common lavas of Veſuvius and Iceland, and of which the broken pieces looked as if they had been accumulated by art. The lava currents cooling very ſuddenly, may eaſily be imagined to produce ſuch an effect. Having aſcended about 12 or 15 yards perpendicular, we found ourſelves on a great level plain of ſix or eight miles in circuit, in the midſt of which we obſerved a large hill of an exact conical ſhape, and of a reddiſh colour, but any more particulars. Part of the plain [illegible] was covered with great numbers of ſmaller hillocks, conſiſting of the ſame wild and ragged lava as the rocks by the ſea, and ringing like glaſs when two pieces are ſtruck together. The ground between the heaps of lava was covered with a black earth, on which we walked very firmly; but when theſe heaps did not appear, the whole was a red earth, which was ſo looſe, and in ſuch dry minute particles, that the wind raiſed clouds of duſt upon it. The conic hills conſiſted of a very different ſort of lava, which was red, ſoft, and crumbling into earth. One of theſe hills ſtands directly in front of the bay, and has a wooden croſs on its ſummit, from whence the bay is ſaid to take its name. Its ſides are very ſteep, but a path near three quarters of a mile long winds round it to the ſummit. After examining this remarkable country a little longer, we concluded, with a great degree of probability on our ſide, That the plain on which we ſtood was once the crater or ſeat of a volcano, by the accumulation of whoſe cinders and pumice ſtones the conic hills had been gradually formed: that the currents of lava which we now ſaw divided into many heaps, had perhaps been gradually buried in freſh cinders and aſhes; and the waters coming down from the interior mountain in the rainy ſeaſon had ſmoothened every thing in their way, and filled up by degrees the cavity of the crater. The rocky black lava was the reſidence of numberleſs men-of-war birds and boobies, which ſat on their eggs, and ſuffered us to come cloſe to them.

"About eight in the evening, it being then quite dark, a ſmall veſſel came into the bay, and anchored directly within us. Captain Cook having hailed her repeatedly, received in anſwer that ſhe was the Lucretia, a New York ſloop, which had been at Sierra Leon, and was now come to catch turtles, in order to ſell them at the windward iſlands of the Weſt Indies. A lieutenant was ſent on board, who learned from the maſter, that he had taken our ſhip to be a French Indiaman, and was very deſirous of trading with Engliſh India ſhips, in which he was diſappointed by the company's regulations. He dined with our officers the next day, but on the 31ſt at day break left the iſland. On the 30th in the morning, we landed a ſecond time; and, croſſing the plain, arrived at a prodigious lava current, interſected by many channels from ſix to eight yards deep, which bore ſtrong marks of being worn by vaſt torrents of water, but were at preſent perfectly dry, the ſun being in the northern hemiſphere. In theſe gullies we found a ſmall quantity of ſoil conſiſting of a black volcanic earth, mixed with ſome whitiſh particles gritty to the touch. Here we ſaw ſome ſmall bunches of purſlane, and a ſpecies of graſs (*panicum ſanguineum*) which found ſufficient nutriment in the dry ſoil. Having at laſt, with great fatigue, climbed over this extenſive and tremendous current of lava, which was much more ſolid than the heaps nearer to the ſea, we came to the foot of the Green Mountain, which even from the ſhip's place in the bay we had plainly diſtinguiſhed to be of a different nature from all the reſt of the country. Thoſe parts of the lava which ſurrounded it were covered with a prodigious quantity

Aſcenſion Iſland ‖ Aſcent.

of purſlane, and a new kind of fern, *lonchites Adſcenſionis*, where ſeveral flocks of wild goats were feeding. The great mountain is divided in its extremities, by various clefts, into ſeveral bodies; but in the centre they all run together, and form one broad maſs of great height. The whole appears to conſiſt of a gritty tophaceous lime ſtone, which has never been attacked by the volcano, but probably exiſted prior to its eruption; its ſides are covered with a kind of graſs, peculiar to the iſland, which Linnæus has named *ariſtida Adſcenſionis*. We likewiſe obſerved ſeveral flocks of goats feeding on it; but they were all exceſſively ſhy, and ran with ſurpriſing velocity along tremendous precipices, where it was impoſſible to follow them. The maſter of the New York ſloop acquainted us, that there is a ſpring of water on one part of this mountain, which falls down a great precipice, and is afterwards abſorbed in the ſand. I am almoſt perſuaded, that, with a little trouble, Aſcenſion might ſhortly be made fit for the reſidence of men. The introduction of furze (*ulex Europæus*), and of a few other plants which thrive beſt in a parched ſoil, and are not likely to be attacked by rats or goats, would ſoon have the ſame effect as at St Helena. The moiſture attracted from the atmoſphere by the high mountains in the centre of the iſland, would then no longer be evaporated by the violent action of the ſun, but collect into rivulets, and gradually ſupply the whole iſland. A ſod of graſſes would everywhere cover the ſurface of the ground, and annually increaſe the ſtratum of mould, till it could be planted with more uſeful vegetables.

We returned gradually to Croſs Bay, in the heat of noon, over the plain; having a ſpace of more than five miles to traverſe, where the ſun burnt and bliſtered our faces and necks, and heated the ſoil to ſuch a degree, that our feet were likewiſe extremely ſore. About three o'clock we arrived at the water's ſide; and after bathing in a ſmall cove among a few rocks, we made the ſignal for a boat, and were taken on board. The next forenoon we made another ſmall excurſion, in company with Captain Cook, towards the Green Mountain; but we were all of us ſo much fatigued, that we could not reach it. We made no new obſervations in the courſe of this day, the nature of the iſland being dreary beyond deſcription in its outſkirts."

ASCENSIONAL DIFFERENCE, the difference between the right and oblique aſcenſion of the ſame point to the ſurface of the ſphere.

ASCENT, in a general ſenſe, implies the motion of a body upwards, or the continual receſs of a body from the earth. The Peripatetics attribute the ſpontaneous *aſcent* of bodies to a principle of levity inherent in them. The moderns deny any ſuch thing as ſpontaneous levity; and ſhow, that whatever *aſcends*, does it in virtue of ſome external impulſe or extruſion. Thus it is that ſmoke and other rare bodies *aſcend* in the atmoſphere; and oil, light woods, &c. in water; not by any internal principle of levity, but by the ſuperior gravity or tendency downwards of the parts of the medium wherein they are. The *aſcent* of light bodies in heavy mediums is produced after the ſame manner as the *aſcent* of the lighter ſcale of a balance. It is not that ſuch ſcale has an internal principle whereby it immediately tends upwards; but it is impelled upwards by the preponderancy of the other ſcale; the exceſs of the weight of the one having the ſame effect, by augmenting its impetus downwards, as ſo much real levity in the other; by reaſon the tendencies mutually oppoſe each other, and that action and reaction are always equal. Aſcent ‖ Aſcham.

ASCENT of Bodies on Inclined Planes, the reader will find explained under MECHANICS; *Aſcent of Fluids*, under HYDROSTATICS; and *Aſcent of Vapours* under the article EVAPORATION.

ASCESIS, properly denotes exerciſe of the body. It is formed from the verb ασκεω, uſed by the ancients in ſpeaking of the ſports and combats of the athletæ.

ASCESIS is alſo uſed by philoſophers, to denote an exercile conducive to virtue, or to the acquiring a greater degree of virtue. This is particularly denominated the *philoſophical aſceſis*, becauſe practiſed chiefly by philoſophers, who make a more peculiar profeſſion of improving themſelves in virtue; on the model whereof the ancient Chriſtians introduced a religious aſceſis.

ASCETERIUM, in eccleſiaſtical writers, is frequently uſed for a monaſtery, or place ſet apart for the exerciſe of virtue and religion. The word is formed from *aſceſis* "exerciſe;" or *aſcetra*, "one who performs exerciſe." Originally it ſignified a place where the athletæ or gladiators performed their exerciſes.

ASCETIC, an ancient appellation given to ſuch perſons as, in the primitive times, devoted themſelves more immediately to the exerciſes of piety and virtue, in a retired life; and particularly to prayer, abſtinence, and mortification. The word is derived from ασκεω, *exerceo*, "I exerciſe." Afterwards, when the monks came in faſhion, this title was beſtowed upon them; eſpecially upon ſuch of them as lived in ſolitude.

ASCETIC is alſo a title of ſeveral books of ſpiritual exercile.—As, the *Aſcetics*, or devout exerciſes of St Baſil, archbiſhop of Cæſarea in Cappadocia.

We alſo ſay the *aſcetic* life, meaning the exerciſe of prayer, meditation, and mortification.

ASCHAFFENBURG, a town of Germany, ſeated on the river Maine, in the circle of the Lower Rhine, and territory of the elector of Mentz, who has a palace there. It is memorable for being the place where the king of Great Britain took up his quarters the night before the battle of Dettingen. E. Long. 9. 35. N. Lat. 50. 14.

ASCHAM, ROGER, an Engliſhman of conſiderable learning in the 16th century, was born at Kirby Wiſke, a village in Yorkſhire, near Northallerton. John Aſcham, his father, was houſe-ſteward in the family of Scroop, and by his wife, Margaret, was connected with ſeveral reſpectable families. A ſhort time before his death, Sir Anthony Winfield, having conceived a predilection for his third ſon Roger, took him into his family, and extended his bounty ſo far as to give him the advantage of a private education along with his own ſons. Under a domeſtic tutor, he made a rapid progreſs in claſſical learning, and early diſcovered a great partiality for reading. The ſuperiority of genius and docility of temper which he conſtantly

diſplayed,

Aſcham. diſplayed, induced his patron to ſend him to St John's college, Cambridge, in the year 1530.

The revival of Grecian and Roman literature at the period Aſcham entered upon his ſtudies, was peculiarly favourable to the natural bent of his inclination. A deſire of excelling uniformly influenced his conduct, and adopting the maxim, *Qui docet, discit*, he began to teach boys the rudiments of the Greek language, as ſoon as he was acquainted with the elementary parts himſelf. His plan was approved by Pember; and under the direction of this valuable friend, he ſoon became acquainted with the beſt Greek and Latin authors. But he took particular delight in reading Cicero and Cæſar; and upon them he formed the elegance of his Latin ſtyle, which proved ſo honourable and ſo advantageous in the after part of his life.

Aſcham took his firſt degree of bachelor of arts in the 18th year of his life, and was choſen fellow of the college about a month afterwards. The favourable diſpoſition, however, which he manifeſted towards the reformed religion, was no ſmall obſtacle in the way of his preferment. He was elected maſter of arts in the year 1537, the 21ſt of his age; and about this period he began to act in the capacity of a tutor.

His reputation for Greek learning ſoon brought him many pupils; and theſe were ſo well inſtructed, that ſeveral of them afterwards aroſe to conſiderable eminence. Of theſe, William Grindall was one of the moſt diſtinguiſhed, who obtained the ſtation of maſter of languages to the lady Elizabeth, upon the recommendation of Sir John Cheke. It appears uncertain why Aſcham himſelf was not appointed to that honourable ſtation, but his partiality for the univerſity ſeems, from a hint in one of his letters, to have been the cauſe. At that period there was no particular chair appropriated to the Greek language; but Aſcham was appointed by the univerſity, to read lectures upon that language in the ſchools. A diſpute aroſe in the univerſity at that time about the pronunciation of the Greek language, in which Aſcham firſt oppoſed the method obſerved by Sir John Cheke and Sir Thomas Smith; but upon more mature deliberation, he adopted that method, which has ever ſince been practiſed in the Engliſh ſchools. Both on account of the beauty of his hand-writing, and the purity and elegance of his Latin, he was employed to write the public letters of the univerſity.

By the advice of his friend Pember, he turned his attention to the ſtudy of inſtrumental muſic, and thereby enlivened his leiſure hours, and prepared his mind for renewed exertion. In his ſtudy he alſo amuſed himſelf with embelliſhing the pages of his manuſcripts with beautiful draughts; and in the field, he joined in the diverſion of the bow and arrow. The learned Aſcham did not deem his labour improperly beſtowed in writing a book entitled *Toxophilus*, in that age when the practice of fire-arms was in its infancy, and the proper uſe of the bow was of more importance than for mere amuſement. This work was uſeful at that time for introducing into the Engliſh language, a more natural, eaſy, and truly Engliſh diction, than was formerly in uſe; and it alſo abounds with many beautiful alluſions and curious fragments of Engliſh hiſtory. Aſcham candidly acknowledges, that being anxious to make the tour of Italy, which was then the great republic of letters, and particularly of Greek literature, he waſted by delaying his return to the King, to obtain a penſion, to enable him to make that tour. It reflects ſome honour on the memory of Henry VIII. that in the year 1544, he beſtowed upon him a penſion of 10l. which Dr Johnſon, conſidering the circumſtances of the times, eſtimates at the value of 100l. Upon the death of Henry, this penſion was for ſome time diſcontinued, but was again renewed by Edward VI. and doubled by Queen Mary. In the ſame year alſo, Aſcham obtained the appointment of orator to the univerſity, in which office he behaved with great reputation, during the period he was connected with the univerſity.

For ſome years he received an annual gratuity from Lee, archbiſhop of York, but to what amount is not recorded; and, in 1548, upon the death of his pupil Grindall, preceptor to the lady Elizabeth, his pupils and writings had acquired him ſuch celebrity, that he was appointed to direct the ſtudies of that princeſs. He ſucceſsfully acquitted himſelf in that honourable charge; but two years after, from ſome unknown cauſe or cauſes of diſſatisfaction, he returned to the univerſity, having taken an abrupt leave of the princeſs. This part of his conduct did not leſſen him in the eſteem of Elizabeth; for in the ſame year, ſhe recalled him to court, and appointed him ſecretary to Sir Richard Moriſine, ambaſſador to the emperor Charles V. In his way to London, he paid a viſit to Lady Jane Gray, whom he found in her chamber, reading Plato's Phædo, in Greek, "and that," ſays he, "with as much delight, as ſome gentlemen would read a merry tale in Boccace;" while the duke and duchеſs, and the reſt of the houſehold, were hunting in the park.

In the character of ſecretary to Sir Richard, beſides aiding him in the management of his public affairs, he alſo conducted his private ſtudies. During the mornings of four days in the week, he read with him a portion of Herodotus or Demoſthenes; and, in the evenings, ſome pages of Sophocles or Euripides; and, on the other mornings, he wrote the letters of public buſineſs; and, on the evenings, he either wrote his own private letters, or continued his diary and remarks. While Aſcham was on his travels, he made a ſhort excurſion to Italy; but was much diſguſted with the manners of that people, eſpecially of the Venetians. After his return from that tour, he favoured the world with a curious tract, intitled "A Report and Diſcourſe of the Affairs and State of Germany." &c.

Upon the death of Edward VI. Moriſine was recalled, and Aſcham returned to the univerſity. But through the intereſt of Biſhop Gardiner, the fortune of Aſcham ſoon took a favourable turn, who although he knew him to be a Proteſtant, procured him the office of Latin ſecretary to the queen, with liberty to retain his univerſity emoluments, and the additional ſalary of 10l. a-year. The prudence of Aſcham enabled him to act a reſpectable part, both under the intolerant reign of Mary, and alſo in the moſt perilous ſituations during the reign of Elizabeth; while the readineſs and elegance of his Latin ſtyle, rendered him a uſeful member at court. He is reported, to have written during the courſe of three days 47 letters, to perſons in the higheſt ranks of life.

When the crown paſſed to a Proteſtant prince, it

Aſcham || Ascites.

made little alteration in the condition of Aſcham, who ſtill retained his ſtation. He ſpent ſeveral hours every day in reading the learned languages with the queen; and her proficiency was equal to his labours, and it might have been expected, that his rewards would have been more ample than 20l. per annum, together with the prebend of Weſtwang. Some have alleged, that the queen kept him poor, becauſe, it is ſaid, he was addicted to cock-fighting, and in other reſpects extravagant; but the defects in his character ſhould not have deprived him of the rewards due to actual ſervices.

In conſequence of a converſation which took place in the apartment of Secretary Cecil, upon the ſubject of education, Sir Richard Sackville, who was preſent, requeſted him to write a book on the general ſubject of education. This work is entitled "The Schoolmaſter;" and while it diſplays the humanity of the author, contains many excellent inſtructions to the teachers of youth. This treatiſe was publiſhed by his widow after his death. By too cloſe application in compoſing a poem, which he intended to preſent to the queen on the new year's day of 1569, he was ſeized with an illneſs, which proved fatal, and he died in the 53d year of his age, on the 23d of December, 1568. His death was univerſally lamented, and the queen expreſſed her regret, by ſaying, that "ſhe would rather have loſt 10,000l. than her tutor Aſcham." His epiſtles, which are valuable, both on account of their ſtyle and hiſtorical information, were publiſhed after his death, and dedicated to the queen; and his other works have ſince been collected into one volume by Bennet.

Roger Aſcham appears to have been poſſeſſed of an amiable diſpoſition, kind to his friends, and grateful to his benefactors. Although he was firm in his adherence to his religious opinions, yet his zeal did not carry him to exceſs in oppoſing thoſe of other men. His talents both as a man and as a ſcholar were very conſiderable, and he deſerved more ample returns for his ſervices than were conferred upon him by thoſe who enjoyed the benefit of his labours, in the advancement of ſolid learning and correct taſte. (*Gen. Biog.*)

ASCIBURGIUM, in *Ancient Geography*, mentioned by Tacitus, ſuppoſed to be one of the 50 citadels built on the Rhine; who adds, ſome imagined it was built by Ulyſſes. Here was a Roman camp and a garriſon. To its ſituation on the banks of the Rhine anſwers a ſmall hamlet, now called *Aſburg*, not far from Meurs, in the duchy of Cleves.

ASCIDIA. See Helminthology *Index*.

ASCII, among *Geographers*, an appellation given to thoſe inhabitants of the earth, who, at certain ſeaſons of the year have no ſhadow: Such are all the inhabitants of the torrid zone, when the ſun is vertical to them.

ASCITÆ, (from ἀσκος, a *bag* or *bottle*), in *Antiquity*, a ſect or branch of Montaniſts, who appeared in the ſecond century. They were ſo called, becauſe they introduced a kind of Bacchanals into their aſſemblies, who danced round a bag or ſkin blowed up: ſaying, they were thoſe new bottles filled with new wine whereof our Saviour makes mention, Matth. ix. 17.—They are ſometimes alſo called *Aſcoinæ*.

ASCITES is *Medicine*, the dropſy of the abdomen. See Medicine *Index*.

Aſclepia || Aſculum Apulum.

ASCLEPIA, a feſtival of Æſculapius the god of phyſic, obſerved particularly at Epidaurus, where it was attended with a conteſt between the poets and muſicians, whence it was likewiſe called Ἱερος Αγων, *the ſacred contention*.

ASCLEPIAD, in *Ancient Poetry*, a verſe compoſed of four feet, the firſt of which is a ſpondee, the ſecond a choriambus, and the two laſt dactyls; or of four feet and a cæſura, the firſt a ſpondee, the ſecond a dactyl, after which comes the cæſura, then the two dactyls; as, *Mæcenas atavis edite regibus*.

ASCLEPIADES, one of the moſt celebrated phyſicians among the ancients, was a native of Pruſa in Bithynia; and practiſed phyſic at Rome, under Pompey, 96 years before the Chriſtian era. He was the head of a new ſect; and, by making uſe of wine and cold water in the cure of the ſick, acquired a very great reputation. He wrote ſeveral books, which are frequently mentioned by Galen, Celſus, and Pliny; but they are now loſt.

Asclepiades, a famous phyſician under Hadrian, of the ſame city with the former. He wrote ſeveral books concerning the compoſition of medicines; both internal and external.

ASCLEPIAS, swallow-wort. See Botany *Index*.

ASCODUTÆ, in *Antiquity*, a ſect of heretics in the ſecond century, who rejected all uſe of ſymbols and ſacraments, on this principle, That incorporeal things cannot be communicated by things corporeal, nor divine myſteries by any thing viſible.

ASCOLI, formerly *Aſculum Apulum*, a pretty large and populous town of Italy, in the marquiſate of Ancona, and territory of the church. It is a biſhop's ſee, and ſeated on a mountain, at the bottom of which runs the river Fronto. E. Long. 15. 20. N. Lat. 42. 47.

Ascoli *de Satriano*, formerly *Aſculum Picenum*, an epiſcopal city of Italy, in the kingdom of Naples; ſeated on a mountain. E. Long. 15. 5. N. Lat. 42. 8.

ASCOLIA, in *Grecian Antiquity*, a feſtival celebrated by the Athenian huſbandmen in honour of Bacchus, to whom they ſacrificed a he-goat, becauſe it deſtroys the vines (*Ovid. Faſt.* i. 357); and, to ſhow the greater indignity to an animal hated by Bacchus, the peaſants, after having killed him, made a foot-ball of his ſkin. Virgil has beautifully deſcribed the occaſion of the ſacrifice and manner of celebrating the feſtival, *Georg.* ii. 380.

ASCRIPTITII, or Adscriptitii, were a kind of villains, who, coming from abroad, ſettle in the lands of ſome new lord, whoſe ſubjects or ſervants they commence; being ſo annexed to the lands, that they may be transferred and ſold with the ſame. Aſcriptitii is ſometimes alſo uſed in ſpeaking of aliens or foreigners newly admitted to the freedom of a city or country.

Ascriptitii was alſo uſed in the military laws for the recruits appointed to ſupply the loſſes of the legions, called alſo *Accenſi*.

ASCRIVIUM, in *Ancient Geography*, a town of Dalmatia, on the Sinus Rhizicus (Pliny, Ptolemy): Now *Cattaro* (Harduin); the capital of the territory of Cattaro, in Venetian Dalmatia. E. Long. 19. 20. Lat. 45. 25.

ASCULUM apulum, in *Ancient Geography*, a town of Apulia, much mentioned in the war with Pyrrhus

Aſculum Picenum || Aſhby de la Zouch.

Pyrrhus (Florus, Plutarch): Now called *Aſcoli*; a city of the Capitanata, in the kingdom of Naples. E. Long. 16. 30. Lat. 41. 15.

Aſculum Picenum, in *Ancient Geography*, a town of the Picenl (Cæſar); and the capital (Florus): Now *Aſcoli*, in the marquiſate of Ancona, on the river Fronto. E. Long. 15. 5. Lat. 42. 50.

ASCYRUM, PETER'S WORT. See BOTANY *Index*.

ASDRUBAL, the name of ſeveral Carthaginian generals. See CARTHAGE.

ASEKI, or ASEKAI, the name which the Turks give to the favourite ſultanas who have brought forth ſons. Theſe are greatly diſtinguiſhed above others in their apartments, attendants, penſions, and honours. They have ſometimes ſhared the government. The ſultana who firſt preſents the emperor with a male child, is reckoned the chief favourite, is called *hayek aſeki*, and ranks as a legitimate wife: though, from the time of Bajazet I. the ſultans are forbid to marry by a public law, which Solyman II. violated in favour of Roxalana.

ASELLUS, in *Zoology*, the trivial name of a ſpecies of oniſcus. See ONISCUS, ENTOMOLOGY *Index*.

ASGILL, JOHN, a late humorous writer, was bred to the law, and practiſed in Ireland with great ſucceſs. He was there elected a member of the houſe of commons, but was expelled for writing a treatiſe on the poſſibility of avoiding death; and being afterwards choſen a member for the borough of Bromber in Suſſex, he was alſo on the ſame account expelled the parliament of England. After this, he continued 30 years a priſoner in the Mint, Fleet, and King's-bench; during which time he publiſhed a multitude of ſmall political pamphlets, ſeveral of which were in defence of the ſucceſſion of the houſe of Hanover, and againſt the pretender. He died in the rules of the King's-bench, in the year 1738, when he was upwards of fourſcore.

ASH. See FRAXINUS, BOTANY *Index*.

Aſh-Hole, among chemiſts, is the loweſt part of a furnace; and is intended to receive the aſhes falling from the fire, and to give a paſſage to the air which is to be introduced into the furnace, to keep up the combuſtion.

Aſh-Wedneſday, the firſt day of Lent; ſuppoſed to have been ſo called from a cuſtom in the church, of ſprinkling aſhes that day on the heads of penitents then admitted to penance. See LENT.

ASHBORN, a town in Derbyſhire, ſeated between the rivers Dove and Compton, over which there is a ſtone bridge, in a rich ſoil. It is a pretty large town, though not ſo flouriſhing as formerly. W. Long. 1. 35. N. Lat. 53. 0.

ASHBURTON, a town in Devonſhire. It ſends two members to parliament, and is one of the four ſtannery towns. It is ſeated among the hills, which are remarkable for tin and copper; and has a very handſome church; as alſo a chapel, which is turned into a ſchool. It gives title of Baron to the family of Dunning. W. Long. 3. 10. N. Lat. 50. 30.

ASHBY DE LA ZOUCH, a market-town in Leiceſterſhire, ſituated in W. Long. 1. 20. N. Lat. 52. 40. It had a caſtle which was long in the poſſeſſion of the family of de la Zouch. It afterwards fell into the hands of Edward IV. who granted it to Edward Haſtings, created Baron Haſtings, with leave to make a cellar of the main-houſe, to which he adjoined a very high tower. It was demoliſhed in 1649, but a great part of the tower is ſtill ſtanding. It now belongs to the earl of Huntingdon.

ASHDOD, or AZOTUS. See AZOTUS.

ASHES, the earthy particles of combuſtible ſubſtances after they have been burnt.

If the aſhes are produced from vegetable bodies, they contain a conſiderable quantity of fixed alkali, blended with earthy particles: and from theſe aſhes the fixed alkaline ſalts called *pot-aſh*, *pearl-aſh*, &c. are extracted. See CHEMISTRY *Index*.

The aſhes of all vegetables are ſaline, and found to contain iron.—They are alſo an excellent manure for cold and wet grounds.

Several religious ceremonies depend upon the uſe of aſhes. St Jerome relates, that the Jews in his time rolled themſelves in aſhes, as a ſign of mourning. To repent in ſackcloth and aſhes, is a frequent expreſſion in Scripture for mourning, and being afflicted for our ſins. There was a ſort of ley and luſtral water made with the aſhes of a heifer ſacrificed upon the great day of expiation; the aſhes whereof were diſtributed to the people, and this water was uſed in purifications, as often as any touched a dead body, or was preſent at funerals, (Numb. xix. 17.) Tamar after the injury received from her brother Amnon, covered her head with aſhes, (2 Sam. xiii. 9.) The Pſalmiſt in great ſorrow ſays, that he had eaten aſhes as if it were bread, (Pſ. cii. 9.); which, however, is to be conſidered as an hyperbole. He ſat on aſhes, he threw aſhes on his head; his food, his bread, was ſpoiled with the aſhes wherewith he was covered.

The ancient Perſians had a ſort of puniſhment for ſome great criminals, which conſiſted in executing them in aſhes. The criminal was thrown headlong from a tower 50 cubits high, which was filled with aſhes to a particular height, (2 Mac. xiii. 5. 6.) The motion which the criminal uſed to diſengage himſelf from this place, plunged him ſtill deeper into it, and this agitation was further increaſed by a wheel which ſtirred the aſhes continually about him till at laſt he was ſtifled.

ASHFORD, a market town of Kent, ſituated about 12 miles ſouth-weſt of Canterbury, in E. Long. 45. and N. Lat. 51. 15.

ASHLAR, a term uſed among builders; by which they mean common or free ſtones, as they come out of the quarry, of different lengths and thickneſſes.

ASHLERING, among builders, ſignifies quartering, to lath to, in garrets, about two and a half or three feet high, perpendicular to the floor, up to the under ſide of the rafters.

ASHMOLE, ELIAS, an induſtrious Engliſh antiquarian, and an eminent philoſopher of the 17th century, was born at Litchfield in 1617. Having enjoyed the advantages of a country education, he went to London at the age of 16, and reſided in the family of James Paget, Eſq. one of the barons of the exchequer, and then turned his attention to the law and other branches of literature. In the year 1638, he married, and commenced the buſineſs of attorney in Lincoln's. When the civil war began, he then being a widower, [illegible]

entered into the king's service in the ordnance department. When residing in the city of Oxford in that capacity, he entered Brazen Nose college, and began the study of natural philosophy, mathematics, and astronomy. Naturally inclined to grave and scientific trifles, he wandered too far into the wilds of astrological imposture, not a little encouraged by several eminent men of that age. From the same cause, he entered keenly into the secrets of masonry, and made considerable additions to the history of that sect.

When Worcester was surrendered to parliament in 1646, Ashmole retired to London, where he became acquainted with the famous astrologers, Moore, Lilly, and Booker.

Having retired to Berkshire in the year following, he added the knowledge of botany to his other acquirements. There he became acquainted with Lady Mainwaring, a well-jointured widow, whom he married in 1649; and although her estate was sequestered on account of his loyalty, yet through the interest of Lilly and others, he again recovered his property, and afterwards settled in London, where his house became the resort of all the curious literati of the place. A taste for chemistry, or rather alchemy, was produced, by his conversation with William Blackhouse; and Ashmole, under a feigned name, published a work upon that subject. The next effort of his industry, was a collection of the manuscripts of English alchemy, which he published under the title of *Theatrum Chymicum Britannicum*, in 4to. This work was the effect of great labour and much expence; and although it procured him much fame among the learned, yet it was only a collection of *Alchemy*; and he appears to have been ignorant of real chemical knowledge. About this period, he began to number among his acquaintances Selden, Oughtred, and Dr Wharton.

The wealth he acquired by his marriage engaged him in several disputes, and the lady herself at last made an attack upon him in chancery, but he was honourably acquitted, and the lady restored to her affectionate husband. His active industry never wearied out, and he next attended to the study of antiquity and the investigation of records. Along with Sir W. Dugdale, he about this period traced a Roman road to Litchfield. Abandoning all other pursuits, he began to make preparations for his "History of the order of the Garter;" a production which procured him lasting fame. Upon a visit to Oxford, he gave a full description of the coins bequeathed to that university by Laud; and about this time, John Tradescant, the famous gardener of Lambeth, presented him with the collection of curiosities, which both he and his father had procured.

Upon the restoration, Ashmole was greatly respected by the king, who made him Windsor herald, and employed him to give a description of the royal medals. The offices of commissioner and comptroller of excise were conferred upon him; and being called to the bar in the Middle Temple, he was afterwards admitted a fellow of the Royal Society. The university of Oxford conferred upon him the degree of doctor of physic; and several other employments and emoluments were given him, until he rose to the highest eminence in the literary world. About this time his second wife died, and he married the daughter of his friend Sir W. Dugdale. In May 1672, he addressed his great work on the order of the Garter, to the king, entitled "The institution, laws, and ceremonies of the most noble order of the Garter; collected and digested into one body, by Elias Ashmole of the Middle Temple, Esq. Windsor herald at arms," folio, London, 1672. In favour of his brother-in-law, Mr Dugdale, he resigned his office of herald of Windsor; and when offered the office of garter king-at-arms, he declined it in favour of Sir W. Dugdale. About this time a fire broke out in one of the chambers of the temple adjacent to his, and consumed a library which he had been collecting during the course of thirty-[illegible] years, together with 9000 coins, and many valuable antiquities; but his manuscripts and gold medals fortunately were saved. In 1683, he sent his manuscripts and curiosities to the university of Oxford, which laid the foundation of the *Museum Ashmoleanum*, still in Oxford. On the death of Sir W. Dugdale, he refused a second time the office which he held. At the advanced age of 76, he died, and was interred in the church of Great Lambeth. Industry, perseverance, curiosity, and accuracy, appear to have been the leading features in his character. (*Gen. Biog.*)

ASIA, according to the ancients, was one of the three great divisions of the earth, and is considered by the moderns as one of the four quarters of the habitable globe. Its extent is immense; and its importance, both in a historical and in a philosophical point of view, is very great. It contains every variety of soil and climate, and is inhabited by nations which possess undoubted claims to the highest antiquity. When Europe was yet covered by deep forests, thinly inhabited by a few wild animals, or by a barbarous race of men, destitute of science, and even of the meanest of those accommodations which the progress of art now enables all classes of people to enjoy, Asia abounded with flourishing cities and populous nations, in which commerce and agriculture had reached a considerable measure of improvement.

Asia.

I

The countries of Asia to be considered as connected with each other.

The revolutions which have occurred in different regions of the great Asiatic continent, occupy a great space in the general history of the human race. These revolutions have possessed this peculiar character, that when they commenced in one quarter of Asia, we most frequently find that they extended themselves, in a few years, to the remotest regions, and even sometimes into the centre of Europe. As the human mind usually derives its character from the situation in which it is placed, we shall be enabled by attention to the soil and climate, and geographical position of the principal parts of Asia, to form some general principles from which to deduce the causes that have influenced the destiny of the nations by which it is inhabited. Without enlightened notions of general geography, history degenerates into a mere detail of romantic adventures, and no valuable progress can be made in political or in commercial science. We shall here therefore give a general description of this vast continent, considering it, as far as possible, as one great whole, the various parts of which have at times possessed an influence over each other; leaving its particular districts and countries, to be separately discussed as they occur in the arrangement of our work, unless in such instances

Afia. ſtances as may ſeem to claim ſpecial notice from the ſingularity of their nature, or the recentneſs of the period at which time they have come to the knowledge of the European nations.

2 Boundaries of Afia. Beginning with its north-weſt corner adjoining to Europe, the boundary of Aſia commences at Weigats ſtraits, oppoſite to the iſland of Nova Zembla, in what is called the *Northern ocean* or Icy ſea. From thence the boundary extends ſouthward along the Uralian chain of mountains, which are thus accounted half European and half Aſiatic. After leaving theſe mountains, Aſia is underſtood by geographers to proceed in a ſouth-weſterly direction, through the provinces of the Ruſſian empire, till it meets the river Don, where it approaches neareſt to the Volga. Proceeding along the river Don, it enters into the Black ſea, which it croſſes diagonally, proceeding to the ſouth-weſt through the ſtraits of the Boſphorus, at Conſtantinople, and through the Propontis and Hellſpont; from whence turning ſouth it proceeds through the Archipelago, and the eaſtern part of the Mediterranean ſea called the *Levant*, to the iſthmus of Suez, a narrow neck of land of 60 miles over, which divides Aſia from Africa. The remaining part of the weſtern boundary of Aſia, is formed by the Red ſea or Arabian gulf, which is connected with the Arabian ſea, by the ſtrait of Babelmandel.

The ſouthern boundary of Aſia, is formed by the great Indian ocean, under a variety of names derived from the different parts of the Aſiatic coaſt, which are waſhed by its waters. Along the whole of this ſouthern boundary, the ocean and the land alternately encroach upon each other, thereby forming immenſe bays and gulfs of the ocean, and peninſulated tracts of land. Thus to the eaſtward of the ſtraits of Babelmandel, the Indian ocean advances northward under the appellation of the Arabian ſea, having the peninſula of Arabia on the weſt, and the weſtern peninſula of India on the eaſt. Penetrating ſtill farther north, it receives the name of the gulf of Ormus, and afterwards of the Perſian gulf, which advances very far in a north-weſterly direction, having Arabia on the ſouth-weſt, and Perſia on the north-eaſt. The ſame Arabian ſea in its north-eaſtern extremity, making a ſlighter inroad upon the land, receives the river Indus on the eaſt of Perſia, and is called the gulf of Scindi. To the eaſtward of the neareſt peninſula of India, the ſame Indian ocean forms a moſt extenſive gulf, called the *bay of Bengal*, bounded on the eaſt and weſt by the two Indian peninſulas. The farther peninſula ſtretches to a great diſtance ſouthward under the name of *Malacca*, beyond which the boundaries of the continent aſſume in general an eaſterly direction, more eſpecially after paſſing the gulf of Siam, immediately beyond Malacca and the gulf of Tonkin, on the boundaries of China and of the farther India. The Chineſe empire encroaches eaſtward upon the great Pacific ocean, which is here the boundary of Aſia. Its coaſts are ſufficiently regular. Its bays and gulfs are trifling when compared with thoſe of the Indian ocean, although towards its northern extremity, the Pacific ocean, under the name of the *Yellow ſea*, advances into the continent, forming to the eaſtward the peninſula of Corea, of moderate extent. After which this eaſtern ocean paſſing the iſles of Japan, at a great diſtance to the north, again encroaches on the land, forming the ſea or great bay of Okhotſk, which has the peninſula of Kamtſchatka on its eaſtern ſide, and the country of Jakutſk on the weſt. Beyond Kamtſchatka one more gulf is formed in this quarter, called the *ſea of Anadir*, terminating at the gulf of Norton, to which ſucceeds the peninſula of Tſchutſki, ſtretching to the eaſtward, that at length reaches the coaſt of America at the bay of St Lawrence. After which turning to the weſtward, the Aſiatic continent is entirely bounded on its northern ſide by the Icy ſea, forming obſcure gulfs and promontories, of which little knowledge has yet been obtained, and which can never be of much importance to the human race.

Aſia.

2

The great continent whoſe general outline we have [illegible] this rightly traced, muſt undoubtedly vary conſiderably in breadth and length, according to the points from which its dimenſions are meaſured. Some idea, however, may be obtained of the territory included in it, from obſerving that the continent of Aſia, from the Hellſpont at 26° of E. Long. extends to nearly 190° E. Long. at Eaſt Cape, or to the 170° of W. Long. making a line of 114° or 6500 geographic miles, allowing 60 miles to a degree. The extreme breadth of this continent, from the ſouth cape of Malacca, in 1° 2' of N. Lat. to Cape Taimyr Noſ. toſchnoj, in 77° N. Lat. amounts to 4500 geographic miles. Hence the length of the continent of Aſia is not leſs than 7583 Britiſh miles, and its breadth from ſouth to north is about 5250.

4 Relative poſition of the nations of Aſia.

That the relative ſituation of the nations inhabiting this continent may be rightly underſtood, it is neceſſary to remark that the centre of Aſia conſiſts of an immenſe and irregular plain, which is elevated to a vaſt height above the ſurrounding countries, and extends ſome thouſand miles in every direction. This

5 High region of Aſia.

elevated region or high level of land, reſembles like a table, and is ſupported by a circle or line of lofty and precipitous rocks, which overlook in every direction the ſurrounding regions. The high level or elevated territory, which theſe rocks ſurround and ſeem to uphold on all ſides, conſtitutes the proper country of Tartary. The climate, even in latitude 27°, which elſewhere is extremely hot, is here very cold, and the ſoil is barren. In ſome directions, to the extent of 1000 miles, nothing is to be found but frightful deſerts, covered with moving ſands, which at times are carried aloft, as in Arabia and Africa, by the winds. They are rendered paſſable by ridges of mountains which divide them; and the ſummits of theſe mountains are covered with perpetual ſnow. Even where the ſoil ſeems more favourable, only the hardieſt plants and trees can flouriſh in this barren region, whoſe inhabitants have in all ages remained in the paſtoral ſtate, ſubſiſting by the produce of their flocks and herds, without engaging in the labours of agriculture.

6 Deſcription of the Mountains.

This vaſt elevated tract, which is ſituated in the higheſt region of the old hemiſphere, and which forms the largeſt extent of continued elevated land upon the globe, contains in general the tracts or countries of the Kalmucs, of the Mongols, Thibet, and Eaſtern Turkeſtan, or the original country of the Turks. From the borders of this tract in the centre of Aſia, the great rivers of that continent deſcend towards the ocean in every direction: ſuch as the Oby and Jenyſea

Asia. on the weſt, the *Amur* on the eaſt, the *Ganges* and *Burrampooter* on the ſouth, and the *Oby* and *Jeniſca* on the north. The countries that ſurround this tract are, therefore, juſtly conſidered by Major Rennel and others, as a kind of inclined planes or hanging levels, or deſcents along the ſkirts of it, ſeeing the waters flow ſo regularly and uninterruptedly from it, as from a common centre to all the ſurrounding ſeas. On the ſouth of this elevated region, are the vaſt countries of India, deſcending gradually to the great ſouthern or Indian ocean. They receive from their expoſure the fierceſt rays of a tropical ſun, and are ſheltered by the rocky front of the high country behind them from every northern blaſt. On the weſt of the elevated tract, are the countries which formed the ancient Perſian empire, and which in like manner deſcend gradually, though more irregularly, towards the ſetting ſun, and the territory of Europe. On the eaſt of the high table, or elevated central region, is the immenſe empire of China, deſcending with its rivers towards the great Pacific or Eaſtern ocean. On the north of the ſame region is Siberia, deſcending gradually to the Icy ſea. The high country to the ſouth intercepts from Siberia the heated air which might otherwiſe advance towards it from a more fervid climate, while its gradual deſcent towards the north expoſes it unprotected to every blaſt that may aſcend from the icy regions of the pole, and thus the climate is rendered as much too cold in proportion to its latitude, as India is too hot. The ſoil, however, of Siberia, is in many places equal in fertility to that of almoſt any other country of the globe, and it has only been prevented from riſing into importance, by the intolerable ſeverity of a long winter, which has always operated as a tax upon the induſtry of its inhabitants, to prevent any great increaſe of population. Its rivers are bound up during half the year, under a covering of almoſt impenetrable ice; and the ocean into which they flow, can at no ſeaſon be navigated with ſafety, a circumſtance which baniſhes thoſe reſources which an extenſive commerce might afford, to compenſate the evils of the climate.

Geog. of Herodot.

7 Alluvions of the Aſiatic rivers.

It may here be remarked, that the rivers which deſcend towards the ſouth, from the high centre of Aſia, through countries ſubject to periodical rainy ſeaſons, have by their *alluvions*, or by carrying down immenſe quantities of mud and earth, formed vaſt fertile plains near the ſea coaſts, ſimilar in their nature to the Delta, or rich valley of Lower Egypt. Accordingly, in the ſouth of Aſia, from Perſia to China; near the mouths of the Indus, the Ganges, and other rivers, immenſe tracts of level country are found, which are periodically overflowed, and which, aided by the warmth of the climate, exhibit a degree of fertility in all the productions of the vegetable world, of which in our temperate and colder regions we have little conception.

8 Boundaries of the high level.

The high level of which we have now ſpoken, which is of ſo much importance both to the geography and to the hiſtory of Aſia, is bounded, as already mentioned, on all ſides by a creſt or ridge of mountains, adjoining to which are leſſer chains of hills, which gradually ſubſide in the neighbouring low countries. The great ridge called *Imaus* by the ancients, or the *Indian Caucaſus*, is properly the creſt or front of the weſtern declivity towards Perſia. The part of this creſt or the front of the high level towards the ſouth was anciently called *Emodus*, and ſometimes alſo *Imaus*, of which it is a continuation. The modern name is *Hindoo-Kho*.—The northern front of the high territory which overlooks the Baikal lake, and the whole length of Siberia, is of immenſe extent, and is uſually called by hiſtorians the *Altaic* ridge or chain. The appellation of the front of the ſame high country towards China is little known to European geographers, but it forms in itſelf nothing more than a continuation of the ridges of Imaus and Altai ſurrounding the high country of Tartary. Aſia.

9 Chain of mountains proceeding from the high level.

This high country or elevated level, which may with propriety be called *Grand Tartary*, ſends forth in different directions various ramifications of itſelf, or chains of mountains, to the utmoſt extremities of Aſia. Thus it ſends forth eaſtward a chain of mountains to the gulf of Corea to the northward of Pekin. This chain appears like a continuation of the Altaic mountains, which may thus be conſidered as proceeding from the 70° to the 140° of eaſt longitude, or about 5000 miles. Another mountainous chain proceeds north-eaſtward to the gulf or ſea of Ochotſk oppoſite Kamtſchatka. A ſimilar ridge called the *Uralian chain*, proceeds to the north-weſt, and terminating in the vicinity of Nova Zembla, within the polar circle, has already been mentioned as one of the boundaries which divide Aſia from Europe. Another chain, better known to both ancient and modern writers, proceeds from Imaus, or the front of the great high level, weſtward, under the celebrated name of *Mount Taurus*, and terminates in the Mediterranean ſea at the peninſula of Leſſer Aſia. This important ridge has on the one ſide, or to the ſouth, a great part of the ancient Perſian empire, and on the north the great ſalt lake called the *Caſpian ſea*, and alſo the Black ſea, with the high country of Georgia between them, which anciently received the appellation of the *Grecian Caucaſus*.

10 Weſtern Tartary.

A great tract of low country which lies to the eaſt and to the north of the Caſpian, and proceeds weſtward along the ſhores of the Black ſea, alſo receives from modern geographers the appellation of *Tartary*, and was anciently denominated *Scythia*. Hence what is called *Tartary* muſt be regarded as conſiſting of two very diſtinct tracts of country ſituated upon very different levels. Eaſtern Tartary, lying beyond the mountains of Imaus and ſouthward of the mountains of Altai, conſtitutes the high level or elevated central region of Aſia; whereas the country called *Tartary* ſituated upon the Caſpian and the Black ſeas, now ſometimes called *Ruſſian Tartary*, is not only ſituated upon a lower level, but inſtead of conſiſting of a horizontal plain, it lies upon a ſouth expoſure, and its rivers, ſuch as the Wolga and the Don, deſcend ſouthward into the Caſpian and the Black ſeas, which are placed along the northern baſis of the ridge of mountains anciently denominated *Taurus*. Beyond the ſources of the Don and the Wolga, however, the country begins to deſcend towards the polar circle and the Icy ſea, like the reſt of Siberia, of which it partakes the name.

11 Aſia divided into civilized and barbarous.

In all ages Aſia might be divided into two regions; the civilized, containing men who cultivated the ſoil and lived in cities; and the barbarous, whoſe inhabitants ſubſiſted by hunting or by the paſtoral life. To the

Afia. the former belonged the three countries which defcend from the elevated region of Afia on the eaft, the fouth, and the weft, forming the empires of China, of India, and the ancient Perfian empire, extending to the Helleſpont. To the barbarous or uncivilized nations have always belonged the far more extenſive tracts of Siberia, of High Tartary, and of the Weſtern or Lower Tartary, which lies to the north of the Caſpian ſea, of Mount Caucaſus, and of the Black ſea. On the ſouth-weſt of Afia alſo a different race of barbarians, engaged in a great meaſure in a ſimilar life of paſturage, under the denomination of *Arabs*, have occupied an immenſe portion of territory; and both of theſe claſſes of barbarians, the Tartars of the eaſt and north, and the Arabs of the ſouth-weſt, have at times acted a moſt important part in the affairs of Afia, and even of Europe; and by their movements have decided the deſtiny of nations.

12 Knowledge of Herodotus concerning Afia.

The knowledge of the ancients concerning Afia appears to have been extremely limited. Herodotus, like all the ancient writers, admitted the exiſtence of a northern ocean, upon the ſhores of which the Hyperboreans were ſuppoſed to exiſt, a peaceful race of men, upon whom nobody made war, and who never diſturbed the tranquillity of other nations. He was alſo acquainted with the exiſtence of various Scythian, or, as we now call them, *Tartar* tribes, inhabiting the country to the north of the Black ſea and the Caſpian, and upon the river Jaxartes, which he underſtood to flow into the lake Aral to the eaſtward of the Caſpian. But Herodotus did not believe in the exiſtence of an eaſtern ocean, or that Aſia was in that quarter bounded by the ſea. He alſo extended Europe indefinitely to the eaſt, including all in that diviſion of the globe that lies to the northward of Mount Caucaſus and the Caſpian ſea. To the eaſtward of what he called Aſia, that is the Perſian empire, he conſidered India as the laſt inhabited country, aſſerting, that "the Indians are the people of Aſia that are neareſt the eaſt and the place of the riſing ſun." Beyond India he confeſſed that he knew nothing. "As far as India (ſays he) Aſia is well inhabited; but from India eaſtward the whole country is one vaſt deſert, unknown and unexplored." In theſe times, therefore, it is certain that the Greeks knew nothing of the vaſt empire of China and its dependencies, or of the peninſula beyond the Ganges, which forms the eaſtern diviſion of India. Indeed it would appear that the elevated region of Tartary formed in theſe early times an impenetrable barrier which divided the weſtern nations of Aſia from thoſe on the eaſt. Neither does it appear that Herodotus was well acquainted with the ſouthern frontiers even of Perſia and Arabia. The whole Arabian ſea, including the Arabic gulf, was called the *Erythrean* or *Red ſea*; but he does not ſeem to have known that the ſea bordering upon the ancient kingdom of Perſia or Perſia Proper, is itſelf nothing more than a gulf like that which divides Arabia from Egypt and Ethiopia, to which the name of *Red ſea* is now excluſively confined.

13 The Macedonian expedition ſatisfied the geography of Aſia.

It is a circumſtance not a little ſingular, that the viſit of Alexander the Great to India through Perſia did by no means extend the limits which preceding geographers had aſſigned to Aſia. A correct knowledge of the coaſt of the conquered empire of Perſia was indeed acquired, but neither to the eaſt nor to the north was any knowledge gained. The high [illegible] forming the front of the elevated region of Tartary, [illegible] denominated by the geographers of [illegible] the *Indian Caucaſus*, probably from ſome obſcure report, that this ridge was a continuance of the [illegible] that name between the Euxine and Caſpian [illegible] beyond India alſo he admitted of no [illegible] of land [illegible] ever, thus making India the moſt eaſtern country of Aſia, and conſequently of the whole earth. [illegible] Herodotus had placed a vaſt deſert beyond it, [illegible] is probable that this diminution of territory to the eaſtward might be a ſacrifice to the vanity of Alexander, who wiſhed to imagine, and to make others believe, that he had approached the world's boundary. In another point alſo the geography of Aſia was falſified by the followers of this conqueror. Herodotus had rightly deſcribed the Caſpian ſea as a great lake, but the followers of Alexander imagined they had diſcovered it to be a gulf of the northern ocean. With this ocean, therefore, they were under the neceſſity of ſuppoſing it to communicate by a narrow channel; a circumſtance which led them to limit the continent to a very trifling extenſion northward. The knowledge which Herodotus poſſeſſed concerning the unconnected ſtate of the Caſpian in reſpect of other ſeas being thus loſt, its geographical poſition as a lake remained unknown in the times of Eratoſthenes, Strabo, and Pliny. It was, however, regained in the age of Ptolemy, who reſtored its form of a lake, but under ſuch dimenſions and proportions as demonſtrate that the ſmaller lake, called *Aral*, which is 200 miles to the eaſtward, was miſtaken for a part of it.

14 Mount Taurus of the ancients.

The moſt remarkable feature in the ancient Greek and Roman deſcriptions of Aſia, that is, of the country to the weſtward of Imaus, and to the ſouth of the Caſpian ſea, is the high ridge of mountains which they in general denominated *Taurus*. This ridge was to them as it were a line of ſeparation between two worlds, the civilized and the barbarous; or two climates, the warm and fertile, and the cold and barren. As Taurus, however, is at times broken into diſtinct chains of mountains which occaſionally alter their general direction, various names were aſcribed to particular parts of it, ſuch as Niphates, Caſpius, Paropamiſus, Caucaſus, Emodus, &c. The general chain, however, or the Taurus of the ancient geographers, originated in the ſouth-weſt extremity of what they called *Aſia Minor*, that is, the ſmall part of Aſia embraced between the Euxine or Black ſea on the north, the ſtraits of the Helleſpont and the Dardanelles on the weſt, and the Levant or eaſtern part of the Mediterranean ſea on the ſouth. The ridge of Taurus was underſtood to paſs eaſtward through Leſſer Aſia at no great [illegible] from the ſhores of the Levant. From thence, in its courſe eaſtward, it ſeparated Armenia from Meſopotamia, the two countries called *Media* from each other, and the greater Media from the narrow tract along the ſouthern border of the Caſpian ſea. Oppoſite to the ſouth end of the Caſpian its inferior ridges were divided by a vaſt chaſm called the *Caſpian ſtraits*, which [illegible] the ancients an important geographical point, being ſuppoſed to be in the ſame parallel with Iſſus and Rhodes. This remarkable chaſm [illegible] beſt road or paſſage from Media, Meſopotamia, and the

15 Caſpian ſtraits.

Aſia. weſtern countries in general, to Parthia, Hyrcania, Aria, and others on the eaſt, becauſe by it conſiderable deſerts to the ſouth might be avoided. Alexander the Great paſſed through it in his way from Rages towards Aria and Bactria. It is at preſent called the *ſtrait of Khowar*, from a town or diſtrict in the neighbourhood, and is almoſt due north from Iſpahan: it is eight miles through, and is in general not more than 40 yards in breadth. Pliny ſays, that it is only wide enough for a carriage, and modern writers have ſaid that where it is narroweſt and moſt winding a litter can ſcarcely paſs. The mountains are very lofty on each ſide. The bottom is upon the whole flat, and at certain ſeaſons a conſiderable ſtream of ſalt water flows along it towards the deſert on the ſouth.

After having paſſed the ſouth-eaſt corner of the Caſpian, Taurus proceeding farther eaſtward, was underſtood by the ancients, and repreſented, as ſeparating the countries of Parthia, Margiana, and Bactria, on the north, from thoſe of Aria, Drangiana, and the north-weſtern provinces of India, watered by the heads of the Indus. Here Taurus was known to meet the lofty ridge of Imaus, which we have already mentioned as the weſtern front of the elevated region that forms the centre of Aſia. But as this general account of the opinions of the ancients concerning the courſe of theſe mountains can give little idea of the general level of the countries through which they paſs, we ſhall here notice more particularly the elevation of theſe countries, and the way in which they are divided from each other. In doing ſo we ſhall chiefly follow the authority of the learned and accurate Major Rennell; and we prefer the uſe of ancient appellations to the names aſſigned to theſe provinces by the barbarians who now inhabit or rather wander over them.

16 Elevation or level of countries weſtward from Imaus. We have ſaid, that from Imaus, or from the high region of central Aſia, or Greek Tartary, the country deſcends gradually towards the weſt, forming what was called *Aſia* by the ancients, but what was in truth little more than the Perſian empire. In departing from Imaus, however, the country is very elevated, and various ridges occur, which gradually, after aſſuming a variety of forms, unite in the ridge which terminates far to the weſt at the extremities of the Leſſer Aſia, and was called *Mount Taurus*, as already ſtated. In their progreſs the valleys or ordinary country near theſe mountains gradually becomes lower as it proceeds towards the weſt, and the mountains themſelves decline in height. Even in the weſt, however, the mountains appear not a little elevated.

17 Moſt weſterly territory loweſt. Returning from the weſt, or beginning with the peninſula of Aſia or Aſia Minor, which is encloſed on three ſides by the Mediterranean, Ægean, and Euxine ſeas, it is to be remarked that even this tract acquires ſpeedily a conſiderable elevation; but the ſouthern part of Leſſer Aſia towards the Mediterranean is by far the higheſt, being the proper Taurus itſelf, riſing abruptly from the neighbourhood of the ſea-coaſt, and turning the courſes of the principal waters towards the Euxine ſea on the north.

18 Second portion higher. The next portion of territory is ſtill more elevated, extending from the Euxine to the Caſpian ſea. To the north it ſends forth a tract of very mountainous country called *Caucaſus*, or the modern Georgia, which overlooks the Sarmatian plains, or, in other words, the deſert of Aſtracan, and the country of the Tartars called *Don Coſſacs*, being the low lands on the north both of the Euxine and Caſpain ſeas. Southwards this high region, which is a part of the Taurus of the ancients, overlooks the vaſt low countries, in which are contained the kingdoms or ſtates of Syria, Meſopotamia, Aſſyria, and Babylonia, and even the great Arabian deſert. The ancient diviſions of this high region were called Cappadocia, Armenia, Pontus, Colchis, Iberia, Albania, the country of the Carduchians, and a part of Media. It ſeems to be the higheſt continued tract of territory in Weſtern Aſia, giving riſe to the rivers Euphrates, Tigris, Cyrus, Araxes, Hypanis or Kuban, and Phaſis, which flow from it in different directions towards the Euxine or Caſpian ſeas, or the Perſian gulf. It is worthy of remark, that in the higher parts of this region two great ſalt lakes are to be found. Aſia.

19 Eaſtern tract higheſt. Advancing eaſtward is a third portion of ſtill more elevated territory, extending from the Caſpian ſea to the lofty Imaus, or weſtern creſt of the great Aſiatic highlands. This third region is ſtill higher than the two former parts of the tract of Mount Taurus. Its breadth is very various. Its weſtern quarter is limited by the approach towards each other of the Caſpian and Perſian ſeas; but the high country expands to a much greater breadth beyond the Caſpian, till it is again narrowed on its approach to Imaus by two valleys, along the one of which flows the river Indus to the ſouth, and along the other the Oxus to the north-weſt, anciently terminating in the Caſpian ſea, but now in the ſea or lake of Aral. Of this third portion of the high country of Weſtern Aſia the northern part between the Caſpian ſea and Mount Imaus contains the ancient Parthia, Margiana, and Sogdiana, which overlook towards the north the low countries of Weſtern Tartary in that quarter called *Choraſmia*, and the ſeats of the Maſſagetæ (the ancient Magog) at the Jaxartes. The middle part of the high country contains Aria and Bactriana, adjoining on the eaſt to Mount Imaus. The ſouthern part of the ſame elevated region contains Perſia Proper, Carmania, Arachoſia, &c. which towards the Perſian gulf are bordered by the low tract of Maritime Perſia. The higheſt continuous ridge of this territory is that which paſſes by the ſouth-eaſt of the Caſpian ſea and Hyrcania, between Drangiana on the ſouth and Aria on the north, and from thence between Bactriana and the provinces of India; where, as it approaches Imaus, which, as already ſtated, is the front of a yet more elevated region, it ſwells to an immenſe magnitude and height, and is covered with ſnow annually till the month of Auguſt.

20 Lateral ridges of Taurus. From this tract of elevated country, which we have thus deſcribed as gradually increaſing in height from the Mediterranean to Mount Imaus, various lateral ridges project towards the ſouth, forming between them different hollow baſons or low countries. But theſe ſouthern projections are not equal in altitude to the great chain that proceeds from weſt to eaſt. The moſt weſterly of theſe croſs ridges is that which begins from the body of Taurus, near the place where it is croſſed by the Euphrates, at the northern extremity of Syria. This ridge proceeds to the ſouth, inclining to the weſt, and forms a kind of mound or dam, ſkirting the eaſtern ſhore of the Mediterranean, under the

names

Aſia. names of Amanus, Lebanon, &c. Having paſſed the Mediterranean and the ſouthern border of Paleſtine, it advances to the eaſtern coaſt of the Red ſea, where it ſpreads out, and forms the centre of Arabia, finally terminating in what is called *Arabia Felix*, or the ſouthern part of the Arabian peninſula.

Farther to the eaſt another ridge proceeds towards the ſouth, which was called by the Greeks *Zagros*, and advances to the neighbourhood of the Perſian gulf. Between this laſt ridge on the eaſt, and the former, or Syrian ridge, on the weſt, and Taurus on the north, is a great valley or tract of low country that formed the ancient empire of Aſſyria, which was guarded in this manner by a wall of mountains on three ſides, and by the Perſian gulf and the Arabian deſert on the ſouth. It is watered by the fertilizing ſtreams of the Tigris and Euphrates, upon which Nineveh and Babylon formerly ſtood. To the eaſtward the country becomes more dry and elevated. Paſſing through Media, a great ſalt deſert occupies the centre of the country, having Perſia Proper on the ſouth, and Parthia on the north; and continuing ſtill to aſcend, the mountains become more numerous and leſs regular, in proportion as they approach Imaus. Theſe regions, however, are of great importance in ancient hiſtory as the ſeats of civilization and of empire, though they are now ſunk into obſcurity, and a prey in a great meaſure to tribes of barbarians, who wander over them with their flocks and herds, and reſide in tents. The eaſtern part of the countries known to the ancients as Aſia, or rather as the Perſian empire, ſtill retains that name; but to the weſtward of the Euphrates Aſia belongs to Turkey, excepting the great country or peninſula of Arabia, of which we ſhall here take ſome general notice.

21 Arabia. This country is worthy of the utmoſt attention in a hiſtorical point of view, on account of the influence which its inhabitants have had upon a great part of the nations of Aſia, and conſequently upon a large portion of the human race. They have contrived to extend themſelves farther over the world than almoſt any other people, and have preſerved in all ſituations more ſtrongly than other nations their language, religion, manners, and peculiar cuſtoms. From the river Senegal, on the weſt coaſt of Africa, to the Indus, colonies of Arabs are to be met with, and alſo from the heads of the Euphrates on the north to the iſland of Madagaſcar. Even the Tartar hordes have ſcarcely occupied a wider extent on the globe.

22 Boundaries of Arabia. Arabia, properly ſo called, is that great peninſula formed by the Red ſea, or Arabic gulf, on the weſt, the Indian ocean, or Arabian ſea, on the ſouth, and the Perſian gulf on the north-eaſt. Accordingly the ancients appear to have comprehended under the name of Arabia the whole tract lying between thoſe ſeas and a line drawn from the point of the Perſian gulf to that of the Arabic gulf. This line, however, was never the real boundary of the country, which appears to have at all times extended northwards to a great diſtance, and to have been limited on one ſide by the river Euphrates, and on the weſt by Syria, Paleſtine, and the iſthmus of Suez. Thus Arabia may be regarded as a vaſt but irregular triangle. From the northern point at Beles, where Xenophon and the Greeks firſt paſſed the Euphrates to the ſtraits of Babelmandel, is a line of 1500 miles, forming the weſtern ſide of the triangle, while its ſouthern baſe, [illegible] a front of 1200 miles to the Indian ocean. The medium breadth of the peninſula from the Perſian gulf to the Red ſea is ſuppoſed to be 750 miles. The entire ſurface of the country, therefore, exceeds France or Germany in a conſiderable proportion. Being ſituated from 15° to 32° of N. Lat. and of conſequence partly between the tropics, its climate muſt not ſtrictly be regarded as hot. In ſome provinces, indeed, the heat is exceſſive; but in this country, as in others, the degrees of elevation of the ſoil produce effects upon the temperature which ſet aſide all calculations that might be founded upon the general principle of the vicinity or remoteneſs of the torrid zone. To underſtand the varieties of climate that exiſt in Arabia, it is neceſſary to attend to the form and aſpect of its ſurface. The whole centre of the Arabian peninſula, or interior country, conſiſts of a [illegible] of mountains. Around the foot of theſe mountains, adjacent to the ſea-coaſt, is a belt of flat ground. This belt ſurrounds the whole of the Arabian peninſula. It proceeds along the ſhores of the Red ſea, of the Indian ocean, and of the Perſian gulf. Even the deſert of Syria on the north may be conſidered as a part of this belt. It extends everywhere to the diſtance of about two days journey from the ſea, and is denominated *Tehama* by the Arabs. This belt of flat land is dry and ſandy, and preſents one unvaried picture of deſolation. It bears every mark of having been anciently a part of the bed of the ſea. Its bottom ſoil is a grayiſh clay, with a large proportion of ſand, and having remains of marine animals interſperſed to a great diſtance from the ſhore. It contains large ſtrata of ſalt, which in ſome places even riſe up into hills. Its regular inclination towards the ſea indicates that it has emerged gradually; and the ſea ſeems ſtill continuing to recede. The banks of coral are ſtill increaſing, and coming nearer to the ſhore, ſo as to render the navigation round Arabia every day more and more dangerous. The ſand accumulated by the billows gradually fills up the intermediate ſpace, and joins theſe beds of coral to the continent. This receſſion of the ſea, however, or conqueſt over the watery element, has produced little advantage to man. The Tehama is everywhere a frightful deſert of ſand, diverſified only by naked rocks, with nothing to ſoften the force of the ſun's rays, and in which all vegetation is burnt up. The drought is ſo extreme in theſe flat plains that whole years paſs without rain; and the torrents which deſcend from the hills, which occupy the interior of the country, are loſt among the ſands long before they can reach the ſea.

In the interior country, the ſoil and climate are very different. The great ranges of lofty mountains attract vapours, which, deſcending in abundant rains, cool the air, and quicken vegetation. The cold occaſioned by the height of the country produces falls of ſnow, but this never lies long upon the ground. While the inhabitants of the plains ſuffer by heat, thoſe of the hills are obliged to wrap themſelves in peliſſes; but as the hills or mountains are by no means of the primary order in point of elevation, ice and ſteady froſt ſeem to be unknown. The ſoil, however, is as much diverſified as in other countries; but the figure of the hills is unfavourable to their fertility. They are in general

Aſia. ſo craggy and precipitous as to afford little ſpace or ſoil for vegetable productions, the beſt part of the ſoil being continually waſhed away by the waters. Hence the culture of the land is difficult and expenſive. Terraces muſt be formed, and the ſoil carefully preſerved and accumulated upon them; ſo that, upon the whole, no part of Arabia can with any propriety be denominated rich or fertile. In the ſouthern diviſion of it, called by the ancients, by way of eminence, *the Happy*, or *Arabia Felix*, the inhabitants are at once induſtrious and poor. The deſert between Syria and the Euphrates, or that part of Arabia which extends to the northward of the peninſula, is altogether incapable of improvement by culture. A wide level of ſand is only interſected by ſharp mountains deſtitute of verdure, which render more powerful by reflection the intenſe rays of an almoſt tropical ſun. The rare and hardy plants, the tamarind, or the acacia, that ſtrike their roots into the clefts of the rocks, are nouriſhed by the dews of night. A grove of date trees, or a green paſture, attracts a ſmall colony of Arabs; and a well of water is a place of importance and of reſort.

Yet this deſert is not deſtitute of a tolerable number of inhabitants. They rear the camel, a ſtrong and patient beaſt of burden, which ſubſiſts on the moſt ſtunted and withered roots, or upon herbs of the gourd ſpecies, which abound in the drieſt countries. Neither are they deſtitute of horned cattle, and goats and ſheep; and naturaliſts conſider this as the native country of the horſe, which is the peculiar favourite of the Arabians.

23 Two claſſes of Arabs. Properly ſpeaking, there are two kinds or claſſes of Arabs, the one ſedentary, that is, living in cities, or attached to huſbandry, and the other, wandering in the paſtoral ſtate, called *Bedouins*. The Arabs ſettled in cities, and eſpecially in ſea-port towns, of which there are ſeveral on the coaſts of the peninſula, have loſt ſomewhat of their diſtinctive national manners by their intercourſe with ſtrangers; but the Bedouins, who live in tents, and are divided into tribes or clans, retain the cuſtoms and manners of their earlieſt anceſtors. They are the genuine Arabs, and poſſeſs in the aggregate all thoſe characteriſtics of which the other branches of the nation exhibit different ſhades and degrees. It is the difference in their ways of living that conſtitutes the great diſtinction between the different tribes. The genuine and nobler Arabs diſdain huſbandry, as an employment by which they would be degraded. They maintain no domeſtic animals but ſheep, camels, and horſes. Hence it is known, that Mahomet, the founder of their religion, belonged to a noble tribe or race, becauſe he was a dealer in camels. Some tribes are even mentioned contemptuouſly by their countrymen, becauſe they keep cows or dromedaries; and the peaſants who cultivate the ſoil are accounted the loweſt claſs. Even among the tribes which apply to agriculture, the chiefs live always in tents, and leave the culture of their grounds to their ſubjects, whoſe dwellings are miſerable huts.

In the interior of Arabia, towards the Indian ocean, which is chiefly the quarter capable of being cultivated, ſome governments exiſt of a conſiderable extent; ſuch as, Yemen and Hadramaut, and Oman. In theſe the people are of a mild and civilized character. A ſtranger travels unprotected and alone with as much ſafety as in any country in Europe. The only danger of impoſition or of ill uſage occurs in the ſea-port towns, from the officers of government. Here alſo the religion of Mahomet exhibits a leſs intolerant aſpect than in Turkey, Africa, or almoſt any other country. Indeed it is not a little ſingular, that while this religion extended itſelf to the pillars of Hercules, to the mouths of the Ganges, and to the extreme regions of Tartary, ſeveral tribes of native Arabs, ſecure in the faſtneſſes of the rugged mountains, regarded it with indifference or contempt. Some tribes in the interior could never be ſubdued by the power of the caliphs, and retain the worſhip of the heavenly bodies, as in the times of their anceſtors. Even a tribe of Jews has exiſted for ages amidſt theſe inacceſſible mountains, though the moſt odious of mankind in the eyes of the ſurrounding Mahometans. Aſia.

The Bedouins, or wandering Arabs, who conſtitute the body of the nation, are divided into an endleſs variety of tribes. Their chiefs, whether high or low, are denominated *ſchiecks*. Theſe ſchiecks or nobles are very numerous, and the plebeians are invariably actuated and guided by them: They are both ſhepherds and ſoldiers. The dignity of ſchieck is hereditary, but is not confined to the order of primogeniture. The petty ſchiecks, who form the hereditary nobility, chooſe the grand ſchieck of any diſtrict out of the reigning family, without regarding the degree of his propinquity to his laſt predeceſſor. They pay him little or no revenue, and the other ſchiecks are rather his equals than his ſubjects. If diſſatisfied with his government, they depoſe him, or go away with their cattle, and join another tribe. Theſe emigrations, which happen not unfrequently, produce great revolutions among the tribes. Even the peaſants poſſeſs a ſimilar privilege. Though underſtood to be ſlaves, they may quit the ſervice of a maſter with whom they are diſſatisfied, and chooſe another. It was remarked, in the time of the Romans, that the Arabs were at once addicted to robbery and to commerce; a fact which holds true to this day. They become the faithful ſervants of the merchant, who hires them to conduct him through the deſert; while at the ſame time they are extremely apt to conſider the property of unprotected travellers as an object which they may lawfully ſeize. But it may alſo be remarked, that we are ſometimes apt to conſider as robbery what the Arabs view in another light. Every grand ſchieck, or ſchieck of ſchiecks, as he is called, conſiders himſelf as the abſolute lord of his whole territory, and exacts duties upon all goods carried through his dominions. The Europeans are wrong when they ſuppoſe the ſums paid by travellers to the grand ſchiecks to be a ranſom to redeem them from pillage. On the contrary, it is regarded by the Arab nobles in no other light than as the duties levied in other countries by princes for the ſupport of the government. The ſouthern part of Arabia, called by the ancients *Arabia Felix*, has at times been ſubdued by ſtrangers; but the Bedouins, who live in tents in the deſert, do not appear to have ever been effectually conquered. In a conteſt with them, much is hazarded, and little can be won. Their horſes and camels, which in eight or ten days can perform a march of 400 or 500 miles, diſappear before a victorious army. The ſecret waters of the deſert elude

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the ſearch of the invader, and his troops are conſumed by hunger, thirſt, and fatigue, in the purſuit of an inviſible foe, who mocks his efforts, and at all times finds ſafety in the midſt of a burning ſolitude.

24 How far connected with foreign ſtates.

Notwithſtanding the memory of their ancient independence, even the wandering Arabs are frequently tempted to ſettle near towns, or in fertile provinces; which has in different ages brought them into ſubjection to the ſovereigns of theſe provinces. Their neighbours, alſo, ſuch as the Perſians, the princes of the Greek empire, and the modern Turks, have contrived to acquire an influence over ſome of the tribes, by ſowing diſſenſions among the great families, and eſpouſing the cauſe of pretenders to the dignity of grand ſchieck. Accordingly the Turks allege that they are the ſovereigns of Arabia; but this is no more than a vain-glorious aſſertion, which is ſo far from being true, that they find it neceſſary to pay the uſual tribute to the ſchiecks when their caravans paſs through the deſert to Mecca. The tribes who live near the road keep the wells open, permit the paſſage of merchandiſe, and eſcort the caravans. Quarrels, indeed, often occur, in which the rapacity of the Bedouins is ſeldom more remarkable than the inſolence of the Turks, who regard all the Arabs as rebels. The famous Ali Bey, when he conducted the Egyptian caravan, would not pay all the duties on his way to Mecca, but promiſed to pay the reſt on his return, and forgot his promiſe. On the year following the Arabs aſſembled in greater numbers, and obliged the captain of the caravan to pay both for himſelf and Ali Bey. The Turks exclaimed againſt this as an act of robbery; yet the Arabs had only done themſelves juſtice. The conduct of Abdalla, pacha of Damaſcus, who commanded the Syrian caravan in 1756, was ſtill more odious. When the ſchiecks of the tribe of Harb came to meet him to receive the ſtipulated toll, he gave them a friendly invitation to viſit him; but inſtead of paying the toll, he cut off their heads, and ſent them to Conſtantinople, as a proof of his victory over the rebel Arabs. The ſtroke which they had thus ſuffered, by the death of their chiefs, hindered them from attempting any thing in revenge, on either that or the following year: The caravans travelled in triumph to Mecca, and the Turks boaſted of the valour and prudence of Abdalla Pacha. But in the third year the Arabs avenged the ſlaughtered ſchiecks, and, with an army of 80,000 men, raiſed out of all the tribes, routed the Turks, and pillaged the caravan.—Thus the Arabs, notwithſtanding their internal diviſions, conſider themſelves on extraordinary occaſions as one nation. A certain ſubordination even ſubſiſts among the tribes: The petty tribes being unable to defend themſelves, place themſelves under the protection of the greater, and are governed by their laws; and thus are powerful tribes formed by the union of ſeveral ſmall tribes.

25 Character and food of the people.

The climate and barren ſoil of their country has a conſiderable influence on the general character of the Arabians. They are an extremely ſober and frugal nation, which produces in them an appearance of leanneſs and ſtinted growth. The uſual articles upon which the better ſort ſubſiſt are, rice, pulſe, milk, and butter: mutton is their moſt common ſpecies of butcher's meat, but they ſeldom eat of it, as all kinds of animal food are accounted unwholeſome in theſe hot countries. The common people have little other food than a kind of bread made of *durra*, a ſort of ſmall millet, by kneading it with cakes with oil, butter, or grease. They alſo eat barley bread. Like the other natives of the warm regions of Aſia, they have little real appetite or natural desire for exercise, like the natives of the colder countries of Europe; and this inactivity is, no doubt, increaſed by their general habits of abſtinence and extreme frugality with regard to food. They are aſtoniſhed when they obſerve the quantity of all kinds of meat that Europeans devour at a meal, and account them guilty of the moſt odious gluttony; for they themſelves, at leaſt the wandering Arabs, are not only taught from their youth to live upon little, but even to accommodate themſelves to any kind of food. Hence locuſts are in common uſe among them, and have a conſiderable influence upon their condition. Immenſe clouds of theſe animals ſometimes deſcend upon a diſtrict, and produce the greateſt miſchief, by deſtroying the whole verdure. They darken the air, and appear at a diſtance like clouds of ſmoke. The noiſe of their flight is ſtunning, like that of a waterfall. Every thing that is green is wafted by them; but corn, either ripe or nearly ſo, is too hard for their uſe. The Arabs of the deſert convert this ſcourge to their advantage. They roaſt the locuſts alive, and devour them eagerly; or they kill and dry them, and ſtore them up for uſe: This food is ſaid to be by no means unwholeſome. The Jews of Arabia aſſert, that the fowls, of which the Iſraelites ate ſo largely in the wilderneſs or deſert, were only clouds of locuſts; and they ridicule our tranſlators, for ſuppoſing that they found quails where quails never were.

26 The manner of conduct towards women.

In Arabia polygamy was always tolerated, and is permitted by the law of Mahomet; but the Arabians are, in general, too poor to avail themſelves of the privilege of poſſeſſing a plurality of wives. The law, however, has this effect, that it often induces the rich to give their daughters to poor men in preference to thoſe who are wealthy. The marriage articles are made out before the cadi or judge. The wife's property is ſecured to her even during the marriage, ſo that ſhe becomes abſolute miſtreſs of her huſband's houſe; and he, having no ſeparate property, can have no means of bringing another wife into the family. All women, however, in Arabia live in a moſt retired manner. They receive no viſits from ſtrangers of the other ſex. In the houſes of the rich the front apartments belong to the men, and thoſe behind to the women. In the houſes of perſons of inferior rank, deſtitute of a variety of apartments, when the huſband carries a ſtranger to his houſe, he enters before him, and calls aloud, *tarik*, retire: upon which the women inſtantly diſappear; and even his moſt intimate friends never ſee one of them. Their notions of the delicacy neceſſary to be obſerved, with regard to women, is extreme. It is accounted impolite to ſalute a woman, or even to look her ſteadily in the face. In the neighbourhood of the city of Barra an adventure occurred which diſplays in ſtrong colours the jealouſy of the Arabians in whatever concerns the other ſex. A man of eminence, belonging to the tribe of Montefidſi, had given his daughter in marriage to an Arab of the tribe of Korne. Shortly after the marriage a ſchieck of an inferior tribe viſited him in a coffee-houſe, whether

Asia. whether he was father of the handſome young wife of ſuch a one, whom he named? The father ſuppoſing his daughter's honour ruined, immediately left the company to ſtab her. At his return from the execution of this inhuman deed, he who had ſo indiſcreetly put the queſtion, was gone. Breathing nothing now but vengeance, he ſought him everywhere; and not finding him, killed in the mean time ſeveral of his relations, without ſparing even his cattle or ſervants. The offender offered the governor of Korne a great ſum, if he would rid him of ſo furious an adverſary. The governor ſent for him who had been offended, and endeavoured by threats and a ſhow of the apparatus of puniſhment to force him to a reconciliation; but the vengeful Arab would rather meet death than forego his revenge. Then the governor, to preſerve a man of ſuch high honour, ſoothed him to an agreement, by which the firſt aggreſſor gave his daughter, with a handſome portion, in marriage to him whom he had offended. But the father-in-law durſt never after appear before his ſon-in-law.

28 Their vindictive pint. Revenge is indeed among the Arabs a moſt ungovernable ſentiment. In ſome of the ſtates of the ſouthern part of the peninſula the government is ſtrong enough to reſtrain private revenge, and to aſſume to itſelf the puniſhment of crimes, as in other civilized countries; but over a great part of Arabia the relations of a perſon ſlain are allowed to accept a compoſition in money, to require the murderer to ſurrender himſelf to juſtice, or to avenge themſelves on him or his family. The paſſion of avarice is often found to afford, among barbarians, the beſt means of ſubduing animoſity; but in many places among the Arabians it is accounted diſgraceful to take money for the ſhedding of blood, which, by their laws of honour, can be expiated only by blood. Their refined malice even refuſes to be ſatisfied by the deſtruction of the aſſaſſin either by their own hands or by the hand of public juſtice; for this would be to deliver from an unworthy member a family which deſerves no ſuch favour from them: hence they revenge themſelves, as cuſtom allows, by ſubſtituting an innocent to the guilty perſon, and ſeek an opportunity of ſlaying the chief or the moſt conſiderable perſon of the race of him by whom they have been injured. When a murder has been committed, therefore, the two families are in continual fears till ſome one or other of the murderer's family be ſlain. Till this occur no reconciliation can take place, and the quarrel is occaſionally renewed. If in the conteſt a man of the murdered perſon's family happen to fall, there can be no peace till two others of the murderer's have been ſlain, and there are inſtances of ſuch family feuds laſting forty years.

Nor is the point of honour confined to ſuch caſes as thoſe we have now mentioned. The noble Bedouins carry their pride higher than even our barbarous anceſtors ſeem to have done. If one ſchieck ſays to another, with a ſerious air, "thy bonnet is dirty," or "the wrong ſide of thy turban is out." nothing but blood can wath away the reproach; and not merely the blood of the offenders, but that alſo of all the Arabs of his family. An inſult offered to the beard of an Arab is regarded with equal indignation, and produces equal reſentment.

When theſe capital points, however, are avoided, the Arabs are underſtood to be by no means quarrelſome. They take a pride in preſerving their coolneſs of temper againſt reproachful language. When a diſpute happens ſuddenly to ariſe among them, they make much noiſe, and are apt to forget themſelves, and to proceed to extremities; but ſhould an indifferent perſon calmly ſay to them, "think of God and his prophet," they inſtantly make an effort to reſume their tranquillity, and a reconciliation is effected. If this conteſt cannot be ſettled at once, they chooſe arbitrators to whoſe deciſion they ſubmit. Asia.

29 Manners. The manners of the Arabs are grave and ſerious. As ſoon as boys attain to five or ſix years of age, they paſs whole days together in their father's company, and are indeed allowed to be as ſeldom out of it as poſſible. Being thus always under the eyes of perſons advanced in life, they acquire a penſiveneſs and gravity of manners, and an air of recollection, at a very early age. Their imaginations being accuſtomed to barren deſerts and bare rocks, are apt to acquire a gloomy caſt; but in Yemen or Arabia Felix, where the ſoil is more fertile and the population more conſiderable, they poſſeſs ſufficient vivacity of character, and are extremely fond of ſociety. In the towns of Syria in which they ſettle they are far more cheerful and fond of amuſement than the Turks. Both there and in Arabia Felix they are fond of frequenting coffeehouſes and public markets.

30 Literature. In the earlieſt ages the Arabians were always accounted admirers of poetry, and were accuſtomed to celebrate in verſe the military exploits of their chiefs. The genius and merit of a riſing poet was rewarded by the applauſe of his own and of the kindred tribes; and they regarded him as a herald riſen up to immortalize their renown. Before the days of Mahomet there exiſted an inſtitution which the fanaticiſm of his firſt followers aboliſhed. An annual fair was held, to which the moſt diſtant or hoſtile tribes reſorted, and which laſted thirty days. For ſome time before and after this fair, amounting in all to two, or as ſome ſay, to four months, a general truce took place; during which every public and private quarrel was ſuſpended throughout the whole extent of Arabia. This truce was ſanctioned by the laws of honour; and, as a breach of it was attended with perpetual infamy, every ſword was religiouſly ſheathed while it laſted. At this great market not only corn and wine, but alſo eloquence and poetry were exchanged. The prize was diſputed by the emulation of the bards, and the victorious performance was depoſited in the archives of the prince; and, on ſome extraordinary occaſions, inſcribed in letters of gold, and ſuſpended in the temple of Mecca, which even in theſe early times was a place of national pilgrimage. Generoſity and valour formed the favourite theme of the ſongs of the Arabian poets; and their keeneſt ſatire or bittereſt reproach againſt a deſpicable race, conſiſted of the affirmation, that the men knew not how to give, nor the women to deny. Such a feſtival reſembling, in ſome meaſure, the Olympic games of the Greeks, muſt have poſſeſſed conſiderable influence in humanizing the manners of the people. As the northern part of Arabia was ſituated in the very centre of the moſt civilized nations of antiquity, whoſe caravans muſt have been continually paſſing through it; its inhabitants, therefore, could not fail

Aſia. at a very early period, to acquire ſome portion of that information which an acquaintance with intelligent ſtrangers brings along with it. As a commerce with India appears at a very early period to have been carried on by ſea from the ſouthern parts of the peninſula, it is probable that ſuch a portion of literature as might be requiſite for conducting its tranſactions would be cultivated by the Arabians in a very diſtant antiquity. Literature however was never cultivated to any great extent in this peninſula. In the northern parts, indeed, or in the Syrian deſert, where the Roman and Perſian empires flouriſhed on each ſide, the Arabian city of Palmyra appears to have received and cultivated the learning and the arts of Greece; and at a future period, when the ſucceſſors of Mahomet carried their dominion into other countries, in which they ſettled and purſued the arts of peace, the Arabian conquerors cultivated various branches of literature. At all times, however, the deſert itſelf, or the native country of the Arabians, has exhibited an illiterate race of men. At preſent their youth are not indeed entirely neglected. The chiefs of the deſert can frequently read and write, and in the cities many of the loweſt of the people poſſeſs theſe qualifications. They have ſchools in their moſques for the education of the poor; and in great towns there are ſchools to which perſons in better circumſtances ſend their ſons; but no girls attend the public ſchools, being privately taught at home by women. The Arabians can ſcarcely be ſaid to poſſeſs any ſcience. Aſtronomy is ſomewhat valued by them, but only in ſubſerviency to aſtrology, a ſcience highly eſteemed and very lucrative in the Eaſt, though prohibited by the Mahometan law. From their ignorance they are indeed extremely fond of what are called the *occult ſciences*, which are ſuppoſed to enable their poſſeſſors to become familiar with genii, and to oblige them to obey their pleaſure, to teach how to command the winds and ſeaſons, to cure the bites of ſerpents and many diſeaſes or infirmities. A great part, however, of theſe occult ſciences have appeared to ſtrangers to be nothing more than tricks, which the credulity of the people induces individuals to practiſe upon them. The Arabians are alſo extremely ſuperſtitious. It frequently happens that a town has been reared on the ſpot which it occupies merely in conſequence of its having been the dwelling place of ſome Mahometan hermit or ſaint. In this way the city of Loheia was founded. Its founder and patron was a ſaint called *Schieck Sælei*, who ſpent his days in a hut on the ſhore of the Red ſea. A houſe of prayer was afterwards raiſed over his tomb, and ſome devout perſons imagining it would be a great happineſs to live near the remains of ſo holy a perſon, built huts around it. Nearly at the ſame time the ſea having retreated from a neighbouring harbour, an accident which is always happening on the Arabian coaſt, the inhabitants deſerted it, and ſettled at Loheia, which is now a well-frequented port. In the ſame way the city of Beit el Fakeh originated around the tomb of a ſaint called *Achmed ibn Muſa*. Some devout perſons built themſelves cottages round his tomb, and the harbour of Galeſka being about the ſame time choaked up, the inhabitants of that city removed thither. This ſaint was a great worker of miracles. A Turkiſh pacha, who had been for 20 years a captive in Spain, where he was bound with ponderous chains to two large ſtones, long and vainly invoked the aid of different ſaints. Laſt of all he betook himſelf to the great Achmed, and invoked him above his rivals. The hand ſtretched out its hand from the tomb; and at that very inſtant, in the preſence of many witneſſes, the pacha arrived from Spain, bearing with him his chains and the ſtones to which they were faſtened. This miracle took place not many years ago on the eve of the feſtival of the ſaint, and the Arabs regard it as authenticated by unexceptionable evidence, notwithſtanding all prayers or invocations to ſaints are ſtrictly prohibited by the Koran. Another miracle performed by Iſmael Mulk, the patron ſaint of the city of Loheia, is eaſily accounted for. Two beggars had aſked charity from the dola or governor of Taez, but only one of them had taſted of his bounty. The other went upon this to the tomb of Iſmael Mulk to implore his aid. Iſmael, who, when alive, had been very charitable, ſtretched his hand out of the tomb, and gave the beggar a letter containing an order on the dola to pay the beggar an hundred crowns. Upon examining this order with the greateſt care, it was found that Iſmael Mulk had written it with his own hand, and ſealed it with his ſeal. The governor could not refuſe payment, but to avoid all ſubſequent trouble from ſuch bills of exchange, he had a wall built incloſing the tomb.

In the ſouthern parts of Arabia the poſterity of the ſaints are treated with as much reſpect as is ſhewn to the deſcendants of Mahomet at Mecca, which is very great. Every perſon who can number a reputed ſaint among his anceſtors, is dignified with the title of Schieck, and accounted an eccleſiaſtic by birth. Families thus find it their intereſt to eſtabliſh, by every poſſible means, the ſanctity of the perſon from whom they are deſcended, and to maintain the authenticity of the miracles aſcribed to him. In this manner, in ſpite of the Koran, which is ſtrictly unitarian, the ſuperſtitious worſhip of ſaints is daily extending its influence among the Arabs, and feigned miracles are conſequently multiplying, ſo that they may be ſaid in ſome meaſure to be relapſing into the polytheiſm of their anceſtors. At the ſame time it is to be obſerved, that within theſe forty years a ſort of reformation of religion has been attempted, and even accompliſhed, in a part of the central or mountainous country of Arabia, by one Abdul Wahheb, in whoſe family a ſovereignty of conſiderable extent has been eſtabliſhed. He taught that God, as the creator and governor of the world, is the only proper object of worſhip. He forbade the invocation of ſaints, and the very mention of the name of Mahomet, or of any other prophet, in prayer, as practices ſavouring of idolatry. He forbade the making of vows to obtain deliverance from danger, as a crime againſt providence. He repreſented Moſes, Mahomet, Jeſus Chriſt, who were reſpected by his countrymen as prophets, as merely great men, whoſe hiſtory might be read with improvement; denying that any book was ever written by divine inſpiration, or brought down from heaven by the angel Gabriel.

31 Superſtitions.

In thinly-peopled countries men can afford to be hoſpitable to ſtrangers, becauſe they ſee them ſeldom. In Arabia, however, this virtue is ſtill more valued than elſewhere. Poverty is a misfortune very general

Hoſpitality and charity.

Aſia. among the people of this country; and when travelling through their deſerts they are apt to ſuffer great hardſhips both from hunger and thirſt. Hence among them kindneſs to ſtrangers, and charity to the poor, are the moſt popular of all virtues, and a breach of the ſacred laws of hoſpitality is productive of the moſt indelible diſhonour. The rapacity of even an Arabian robber is checked by the influence of this law, and an enemy is ſafe with thoſe who have conſented to taſte along with him a morſel of bread. On the whole it appears that the inhabitants of this great territory, though in general barbarians, are yet of a mixed character. A part of them have in every age participated the civilization of the countries in their neighbourhood; and though the tribes of the deſert have been always in ſome meaſure independent, and governed only by their own fancy or prejudices, yet they have always acknowledged a connexion with the reſt of the nation that reſide in towns, or that cultivate the ſoil. Though labouring under a degree of that tendency to indolence which is common to rude nations, yet their poverty and the hardſhips to which they are inured, prepare them for the toils of war, and render them capable of enterpriſe.

33 Perſia. Of the preſent Perſian empire, in a general view of Aſia, it is unneceſſary to take much notice. Both ſides of the Perſian gulf are to ſome diſtance poſſeſſed by the Arabs, and the interior provinces have ſunk into decay under a long ſucceſſion of military uſurpations. Cultivation is in a great meaſure confined to the near neighbourhood of a few towns: and a conſiderable part of the open country is uſed for the paſturage of the cattle of wandering hordes of barbarians that have deſcended from Tartary, and that now occupy theſe ſeats of ancient civilization and riches.

We have already remarked, that between the Perſian gulf on the ſouth, and the Caſpian ſea on the north, but neareſt to the Caſpian, a chain of mountains, the celebrated Taurus of the ancients, proceeds from the ſtraits of the Dardanelles eaſtward to the front of the high central region of Aſia called *Imaus*. After paſſing the Caſpian ſea and the Perſian gulf, theſe mountains widen to a great extent, and the middle ridge, as it reaches Imaus, becomes very elevated. This middle ridge appears to be croſſed by no rivers, and accordingly the ſtreams which deſcend from itſelf, or from Imaus on the northern ſide of it, proceed in a north-weſterly direction to the Caſpian or the lake Aral. Theſe are chiefly the Oxus and the Jaxartes. To the ſouth of the middle ridge of Taurus, the rivers deſcend ſouthward to the Arabian ſea or Indian ocean. The principal river that deſcends ſouthward from the weſtern or

34 River Sind or Indus. ſouth-weſtern front of Imaus is the river Sind or Indus, the upper branches of which approach very near to thoſe of the Oxus; and it may be proper here to remark that the preſent commerce between the Ruſſian empire and India proceeds in this channel. The merchants, after leaving the Caſpian ſea, travel in caravans or bodies up the river Oxus and down the river Indus. In the mountainous country near the weſtern and ſouth-weſtern front of Imaus, are ſeveral beautiful valleys, which in all ages have been the admiration of travellers. Among theſe we may mention between Imaus and the Caſpian, the valley or country of Sogdia with its capital Samarcand. This country was in ancient times accounted by the orientals a terreſtrial paradiſe, poſſeſſing all the fertility of a torrid climate with the ſalubrity of the coldeſt regions. Not leſs remarkable, upon the ſouth-weſtern front of Imaus on one of the heads of the river Indus, is the valley of Caſhmere, which in every age has been the happy valley of the Indian poets, or the paradiſe of Hindooſtan. It is of an oval form, about 80 miles in length and 40 in breadth, and is ſuppoſed to have been once filled with water, which having burſt its mound, left this valley fertilized to the moſt diſtant ages by the mud which had been depoſited in it. The emperors of Hindooſtan frequently viſited it to forget the cares of government, and to collect new health and vigour from the ſalubrity of the air and the beauties of the place. In 1664 Aurengzebe went thither for this purpoſe from Agra his Indian capital. M. Bernier attended in quality of phyſician to one of his omrahs. The train of the emperor was extremely ſplendid. The heats on the march were dreadful, as the lofty mountains that ſkirt the front of the high region of Tartary prevent the cool air of the north from deſcending to refreſh the parched plains of India. A vaſt mountain called *Bember* divides Caſhmere from India. The ſouthern ſide of this mountain is ſteep and arid. The proceſſion encamped in the channel of a large torrent dried up, full of ſand and ſtones, which were burning hot. "After paſſing the Bember (ſays M. Bernier) we paſs from a torrid to a temperate zone: for we had no ſooner mounted this dreadful wall of the world, I mean this high, ſteep, black, and bald mountain of Bember, than in deſcending on the other ſide, we found an air that was pretty tolerable, freſh, gentle and temperate. But that which ſurpriſed me more in theſe mountains was to find myſelf in a trice tranſported out of the Indies into Europe. For ſeeing the earth covered with all our plants and ſhrubs, except hyſſop, thyme, marjoram, and roſemary, I imagined I was in ſome of our mountains of Auvergne in the midſt of a foreſt of all kinds of trees, pines, oaks, elms, plane-trees. And I was the more aſtoniſhed, becauſe in all thoſe burning fields of Indoſtan, whence I came, I had ſeen almoſt nothing of all that.

Aſia. 35 Caſhmere.

"Among other things relating to plants this ſurpriſed me, that one and a half days journey from Bember I found a mountain that was covered with them on both ſides, but with this difference, that on the ſide of the mountain that was ſoutherly towards the Indies there was a mixture of Indian and European plants, and on that which was expoſed to the north I obſerved none but European ones, as if the former had participated of the air and temper of Europe and the Indies, and the other had been merely European." The ſame traveller proceeds in his deſcription of this valley or kingdom of Caſhmere. "Thouſands of caſcades deſcend from the ſurrounding mountains of this enchanting plain, and forming rivulets meandring through all parts, render it ſo fair and fruitful, that one would take this whole kingdom for ſome great evergreen garden, intermixed with villages and boroughs diſcovering themſelves between trees, and diverſified by meadows, fields of rice, corn, and divers other legumes, of hemp and ſaffron, all interlaced with ditches full of water, with channels, with ſmall lakes and rivulets here and there. Up and down everywhere are

alſo

Aſia. alſo ſeen ſome of our European plants, flowers, and all ſorts of our trees, as apples, pears, prunes, apricots, cherries, nuts, vines. The particular gardens are full of melons, ſkirrets, beets, radiſhes, all ſorts of our pot-herbs, and of ſome we have not."

This delightful ſpot is ſurrounded by the mountains adjoining to Imaus, which are of vaſt height and rude aſpect, perpetually covered with ſnow. At the foot of the exterior chain of mountains is an inner circle of hills, which abound in trees, graſs, and various ſorts of vegetation, and which are full of all kinds of cattle, as cows, ſheep, goats, gazelles, and muſks. The exterior mountains are ſo lofty and cold, that the pioneers of Aurengzebe were obliged to cut through a glaciere, or a great maſs, as Bernier calls it, of icy ſnow. The capital is ſometimes called *Caſhmere*, ſometimes *Sirinagur*, and ſometimes *Nagas*. It is in N. Lat. 34. 12. on the banks of a celebrated river, the *fabuloſus Hydaſpes* of the ancients. Its current is ſmooth, and it is navigable in Caſhmere by ſmall boats. The town was in Bernier's time three quarters of a French league long on both ſides of the river, and extending from it along a navigable canal to a ſmall but beautiful lake. The houſes are built of wood, four ſtories or more in height. The lower ſtory is for the cattle, the next for the family, and the third and fourth ſerve as warehouſes. The roofs are planted with tulips, which have a moſt beautiful effect in the ſpring. Every part of the country exhibits the remains of palaces, pavilions, and gardens, formed there by the emperors of Hindooſtan. The periodical rains which almoſt deluge the reſt of India, are excluded from Caſhmere by the height of the mountains; and it experiences only light ſhowers, which, however, are ſufficient to feed the thouſands of caſcades which deſcend into the valley from every part of the ſtupendous and romantic bulwark of mountains by which it is encircled. The horſes of this country are ſmall, hardy, and ſure-footed. The cows are black and ugly, but yield abundance of milk and excellent butter. They have alſo a kind of ſheep which is uſed to carry burdens. The elk is mentioned as one of the wild animals that inhabit the woods at the baſe of the ſnowy mountains in the neighbourhood.

Caſhmere is famous for its manufacture of ſhawls made of the wool of the broad-tailed ſheep of Thibet, whoſe fleeces, in fineneſs, beauty, and length, are ſaid to exceed all others in the world. The Caſhmerians engroſs this article, and have factors in all parts of Thibet for buying up the wool, which is ſent into Caſhmere and worked into ſhawls of the higheſt value. The Indian emperor Akbar, who conquered this country in 1585, greatly encouraged this manufacture, and introduced it into Lahore. The natural colour of the wool is ſaid to be gray tinged with red, but ſometimes it is quite white.

The Caſhmerians are accounted an ingenious people, fond of poetry, and having a language of their own. They are induſtrious mechanics, and the various articles of their workmanſhip are ſent to all parts of India. They are celebrated for the fineneſs of their features and their admirable complexions. They look like Europeans, and neither reſemble their neighbours of Tartary nor of India, having nothing of the flat noſes and ſmall eyes of the Tartars, nor of the black colour of the Indians. In the time of Bernier the Indian courtiers were extremely [illegible] to obtain Caſhmerian women, to [illegible] children by them, than the natives of Hindooſtan, that they might paſs for the true Mogul breed of the ſame race with their monarch.

As already mentioned, India conſiſts of two peninſulas, one to the weſtward, and the other to the eaſtward of the Ganges. The weſtern peninſula is overlooked from the north, by that part of the chain of Imaus or Emodus which conſtitutes the ſouthern boundary of the region of Tartary. In the ſouth-weſt corner of this high region the rivers Ganges and Indus have their ſource. After advancing weſtward to no great diſtance from the Indus, the river Ganges turns towards the ſouth, and afterwards traverſes almoſt the whole breadth of the peninſula in an eaſterly direction, till at laſt it proceeds ſouth into the bay or gulf of Bengal. The Indus, riſing in the ſouth-weſtern part of Tartary, called *Caſhgar*, deſcends in a ſouth but ſomewhat weſterly courſe, till it enters the Arabian ſea by various channels to the northward of the bay of Cutch. At its mouth, it has a broad delta or tract of fertile land, like the Nile in Egypt, formed by its own alluvions, or the depoſition of mud brought down from the high country by the periodical floods to which it is ſubject. To a great diſtance from the ſea it flows, like the Nile, along a fertile valley enriched by its inundations. Parallel to the channel of the river, after it has received all its tributary ſtreams, run two chains of mountains, by which its courſe is directed, and its valley is ſeparated from other countries. Beyond the mountains, on the eaſt, extends a ſandy deſert of 200 miles in breadth, by which the valley of the Indus is ſhut out from the reſt of India. The whole courſe of this river amounts to nearly 1000 miles. It has an uninterrupted navigation from the ſea, for flat-bottomed veſſels of nearly 200 tons, as high as the city of Lahore, at the diſtance of about 650 miles. The current of the Indus muſt be rapid, as veſſels frequently fall down the river from Lahore in 12 days; but the aſcending paſſage requires ſix or ſeven weeks.

36 The Ganges and Indus.

As the Indus and the Ganges nearly peninſulate or encloſe weſtern India on the north, in a manner ſimilar to that in which it is encloſed by the ocean on the ſouth, we ſhall take ſome farther notice of the courſe of the Indus. This river is the moſt weſterly of India. Before it enters the narrow tract already mentioned between the mountains, which run parallel to its courſe, it is formed by the contribution of a variety of ſtreams, which have their ſources in the rugged country adjacent to high Tartary. Theſe rivers, whoſe union forms the Indus, water a large and fertile territory, a part of which appears to have belonged to the ancient Perſian empire of Darius Hyſtaſpes. Various great and populous cities have in different ages ſtood upon theſe ſtreams, in what is called the Panjab, or country of the five rivers, which conſiſts of ſpacious and fertile plains. Alexander the Great reached theſe plains, and they formed the ſcene of his exploits againſt Porus and other Indian kings. Here alſo ended the progreſs of the Macedonian conqueror. He built a fleet of veſſels, and deſcended the river with his army; an attempt which he is ſaid to have been induced to make, from a notion that he had found out the head of the Nile. As in his time it was not known to the Greeks

37 Indus deſcribed.

Aſia.

that any other river in the world, excepting that of Egypt, contained crocodiles, the diſcovery of crocodiles in the river Indus, ſuggeſted the notion in theſe times, when geography was ſo little underſtood, that there might be ſome communication between this river and the great river of Africa. Arrian ſays, that Alexander had even written to his mother an account of his diſcovery of the head of the Nile. But the voyage down the river pointed out the miſtake, as it brought him to the ocean.

38 Delta of the Indus.

The lower parts of the Indus, or the fertile but ſwampy land near its mouth, was in the time of the ancients unhealthy and hot in the extreme. This rich delta or triangle of land is of great extent, each ſide of the triangle being 115 miles in length. The mouth of the river was well known at a very early period. Not only did Nearchus, the admiral of Alexander the Great, ſail from it to the Perſian gulf; but at a much earlier period, Darius Hyſtaſpes, from curioſity to aſcertain the place at which the Indus met the ocean, built, according to Herodotus, a fleet on the borders of Scythia, that is, of Tartary, high up the river, and gave the command of it to Scylax, a Grecian of Caryandra, an able ſailor. He was directed to be attentive to diſcoveries on both ſides; and when he reached the mouth, to ſail weſtward, and that way to return home. He executed his commiſſion, paſſed the ſtraits of Babelmandel; and in thirty months from the time he ſailed from Caſpatyrus, landed ſafely in Egypt, at the place from whence it is ſaid, that Necho ſent his Phœnicians to circumnavigate Africa, by its now well-known promontory the Cape of Good Hope. This expedition took place in the 12th year of Darius, and in the year 509 before the Chriſtian era.

The delta or low country is ſtill extremely unhealthy. The heats are ſo violent, in conſequence of the vicinity of the ſandy deſerts, that it is found neceſſary to ventilate the houſes occaſionally, by means of apertures in the tops like chimneys. When the hotteſt winds prevail, the windows that are cloſely ſhut exclude the warmer current of the air, while the more elevated part of the atmoſphere being cooler, deſcends through the chimneys. The ſoil depends for its fertility entirely upon the overflowings of the river; and it ſometimes happens that a ſingle ſhower does not fall during three years. There are no trees upon the delta, but in the drier parts the ſoil is covered with bruſhwood. The city of Tatta ſtands in the delta, upon the weſtern branch of the river, about 65 miles from the ſea, which is the diſtance to which the tide aſcends. The Britiſh had at one period a factory here, for the purpoſe of tranſmitting the Engliſh broad cloths to the high countries around the ſources of the Indus. Beyond Tatta, various towns are formed along the fertile banks of this river, during its whole progreſs between the parallel ranges of mountains, which are diſtant from its banks from 30 to 40 miles. In latitude 29° 8′, on the eaſtern ſide, the Indus is joined

39 River Setlege.

by the river Setlege or Hyſudrus; and it is to be remarked, that in conſequence of the ſandy deſerts by which the lower parts of the Indus are ſurrounded, this is the firſt river that falls into it, in a tract of 520 miles from the ſea. This river Setlege is the ſouthern boundary of the Panjab already mentioned, which having from time immemorial been a moſt fertile and populous region, and at the ſame time the frontier of India towards the north-weſt, has been the ſcene in different ages of the moſt dreadful maſſacres, by the celebrated deſtroyers of mankind, Alexander the Great, Timur or Tamerlane, and Kouli Khan. The river Setlege riſes at the foot of Mount Imaus, and is joined by another ſtream, called the *Beyah* or *Hyphaſis*. Both of them paſs through a fertile tract of country.

40 Chunaub.

About 50 miles above the diſcharge of the Setlege, another river, called the *Chunaub* or *Aceſines*, falls into the Indus. On the ſouthern banks of the Chunaub, in latitude 30° 34′ ſtands the city of Moultan, the capital of a province, in a country very fertile in cotton, and alſo in ſugar, opium, brimſtone, galls, and abounding in camels, which animals alſo are reared in great numbers on the lower parts of the Indus. This city is remarkable for being the principal reſidence of the Banians, an hereditary caſt or tribe, who employ themſelves ſolely in commerce, and are the merchants or brokers of India. Their chief reſides here, but they form ſettlements in every commercial town of India; and they ſend colonies to the trading towns of Arabia and Perſia, and even as far as Aſtracan. As theſe die away or incline to return home, a ſupply is ſent from India of unmarried young men. As no females attend them, they live at Aſtracan and ſome other places, with Tartarian women; but the contract laſts only during their reſidence. They are highly eſteemed for the integrity of their dealings, and are truſted to a great extent by Europeans and other ſtrangers, as well as by the natives. They are the bankers of India; and the confidence repoſed in them is one of the means by which the civilization of that country has been preſerved amidſt its revolutions and the ſanguinary wars of its princes. No prince has ever offered violence to the Banians, with the view of extorting from them their treaſures, without ſpeedily finding himſelf undone. His officers have inſtantly conſpired againſt him, becauſe by robbing the Banians, or bankers in whoſe hands their money was depoſited, he ultimately plundered the very perſons who ſupported his power, and had the readieſt acceſs to his perſon. About 160 miles above Moultan, is Lahore, the capital of the Seiks, a ſet of religioniſts who venerate the ox like the Hindoos, but who are pure Monotheiſts and Predeſtinarians, worſhipping God without the uſe of images. They form a ſort of ariſtocratical republic. They can raiſe 100,000 cavalry, and they have of late become very formidable. They are a kind of Indian reformers, hoſtile both to the government and the religion of the country. They admit of proſelytes, and have no caſts or diviſion into diſtinct hereditary profeſſions. In their territory a vaſt mountain of rock ſalt is found, which is cut into diſhes, plates, and ſtands for lamps.

41 Capital of the Banians.

42 Behut.

Between Lahore and Moultan, the Chunaub is joined by the Behut or the *fabuloſus Hydaſpes*, which flows, as already mentioned, from the romantic Caſhmere. A little above the mouth of the Chunaub, the Indus receives an obſcure river, the Lucca, from the territory on the north-weſt, called *the kingdom of Candahar*. The city of Candahar, ſituated in N. Lat. 33. E. Long. 67. 15. was anciently a place of much importance, being the gate of India, with reſpect to Perſia, and the great magazine of Indian and Perſian goods.

Aſia. goods. Somewhat higher, that is, more northerly, two tributary ſtreams enter the Indus, called the *Coco* or *Cophenes*, and the *Kameh* or *Gurdus*. On the former ſtands the city of Ghizni, and on the latter is Cabul. This laſt city is in N. Lat. 34. 36. and E. Long. 68. 58. near the foot of the Indian Caucaſus, or Imaus. It ſtands in ſo happy a climate, that it produces the fruits both of the temperate and torrid zones, though it is in the near neighbourhood of mountains, whoſe ſummits are covered with perpetual ſnow. The Indian hiſtorians ſpeak of it with raptures. Cabul is the reſidence of the kings of Candahar. It has at all times been of much importance, as the frontier of India towards the river Oxus, which flows into the Caſpian ſea and towards Tartary. In ancient times, it always was a great commercial magazine, as well as an important fortreſs. To this day, it is on the direct road by which the commerce of the ſouthern parts of the Ruſſian empire is carried on with India. It is at preſent noted for its vaſt fairs of horſes and cattle, the firſt of which are brought hither by the Uſbec Tartars; and merchants reſort to theſe markets from Perſia, China, and Tartary. Near the mouth of the river Kameh, the city of Attock ſtands upon the Indus. Attock ſignifies *forbidden*; this being the original boundary of Hindooſtan, towards the north-weſt, which the Hindoos were prohibited to paſs. Here the river is three quarters of a mile broad, and the water is cold, and the ſtream rapid and turbulent, having much black ſand ſuſpended in it. To this place the Indus deſcends from the lofty mountains of Imaus, and the high region of Tartary. The remainder of its courſe, therefore, lies through a country little known, and ſo rude in its ſoil and climate, as ſcarcely to admit even of the moſt ſlender population.

Returning to the ocean, it is to be obſerved, that the moſt eaſtern of the branches into which the Indus is divided towards its mouth, flows into the bay or gulf of Cutch, which advances far into the country, receiving the river Puddar. This river, and the bay into which it flows, form one ſide of the fertile peninſula of Guzerat, the other ſide of the ſame peninſula being contiguous to the gulf of Cambay. The weſtern parts of the peninſula of Guzerat are mountainous and woody. The reſt is extremely rich, and once famed for a very conſiderable commerce of its productions. Here ſtood in former times, on the promontory of Guzerat in the neighbourhood of Diu, one of the laſt remaining poſſeſſions of the Portugueſe in India, the great temple or pagoda of Sumnat. It was deſtroyed in the eleventh century by Mahmud, the greateſt of the princes of that race of Tartars called *Turks*. He was the ſovereign of Ghizni, which we have already noticed as a town in the kingdom of Candahar, upon one of the ſtreams that fall into the Indus from the north-weſt. Being a moſt fanatical Mahometan, he undertook 12 holy wars, as they were called, againſt the unbelieving nations of India. Lahore, Moultan, and Delhi, were compelled to open their gates to him, and he at laſt reached and conquered the rich peninſula or kingdom of Guzerat. On the payment of a tribute, the rajahs preſerved their dominions, and the people their lives and fortunes; but to the religion of the country Mahmud was inexorable. Many hundred temples or pagodas were levelled with the ground.

43 Bay of Cutch.

44 Pagoda of Sumnat.

Many thouſand idols were demoliſhed, and the ſervants of the Arabian prophet were ſtimulated, and rewarded, by the precious materials of which they were compoſed. The pagoda of Sumnat was at the time conſpicuous beyond all the retreats of Indian ſuperſtition. Its magnificence and its deſtruction deſerve well to be noticed, as indicating the character of two Aſiatic nations: the riches and devout ſuperſtition of the one, and the furious fanaticiſm which the other had been able to diffuſe over a great part of the world. This pagoda or temple, was endowed with the revenue of 2000 villages; 2000 Brahmins were conſecrated to the ſervice of the deity, whom they waſhed each morning and evening with water from the diſtant Ganges. The ſubordinate miniſters conſiſted of 300 muſicians, 300 barbers, and 500 dancing girls, conſpicuous for their birth or beauty. Three ſides of the temple were protected by the ocean; the narrow iſthmus was fortified by a natural or artificial precipice, and the city and adjacent country were peopled by a nation of fanatics. They confeſſed the ſins and the puniſhment of Kinnoge and Delhi; but they boaſted, that if the impious ſtranger ſhould preſume to approach their holy precincts, he would ſurely be overwhelmed by a blaſt of the divine vengeance. By this challenge the faith of Mahmud was animated to a perſonal trial of the ſtrength of this Indian deity. Fifty thouſand of his worſhippers were pierced by the ſpears of the Moſlems; the walls were ſcaled; the ſanctuary was profaned; and the conqueror aimed a blow of his iron mace at the head of the idol. The trembling Brahmins are ſaid to have offered ten millions ſterling for his ranſom; and it was urged by the wiſeſt counſellors, that the deſtruction of a ſtone image would not change the hearts of the Gentoos, and that ſuch a ſum might be dedicated to the relief of the true believers: "Your reaſons," replied the ſultan, "are ſpecious and ſtrong; but never in the eyes of poſterity ſhall Mahmud appear as a merchant of idols." He repeated his blows, and a treaſure of pearls and rubies, concealed in the belly of the ſtatue, explained in ſome degree the devout prodigality of the Brahmins. The fragments of the idol were diſtributed to Gazna, Mecca, and Medina. Bagdad liſtened, ſays the hiſtorian, *Gibbon*, to the edifying tale; and Mahmud was ſaluted by the caliph, with the title of *Guardian of the faith and faith of Mahomet*.

43 City of Cambay.

Adjoining to the peninſula of Guzerat, and at the bottom of the gulf of Cambay, ſtands the city of that name, which once was the capital of a conſiderable kingdom. It is ſituated in a great manufacturing country, which furniſhes large quantities of coarſe, unbleached cotton cloth, for Perſia, Arabia, Egypt, and Abyſſinia; alſo blue cloths for the Indian countries, and for the Engliſh and Dutch trade on the weſtern coaſt of Africa; likewiſe blue and white checks to be uſed as mantles in Arabia and Turkey, ſome coarſe, and others enriched with gold; muſlins for turbans, gauzes, mixed ſtuffs of ſilk and cotton, and ſhawls made of the Caſhmerian wool. This country alſo ſends annually to Surat, Bengal, China, Perſia, and Arabia, immenſe quantities of raw cotton, as well as rich embroideries of various kinds.

46 Form of the Hindoſtan

From the bottom of the gulf of Cambay, the peninſula of weſtern India may be ſaid to begin in the ſtrict-

Asia. eſt ſenſe; as a line of coaſt here commences, which proceeds without interruption, or any conſiderable bending, to Cape Comorin, the ſouthern part of the peninſula, after which the coaſt ſuddenly turns to the north-eaſt; and the bay of Bengal bounds the peninſula on the eaſt. From Cambay to Cape Comorin, the weſtern coaſt of the peninſula may be divided into three unequal parts. The firſt extends from the moſt advanced part of the gulf ſouthward, a little beyond the city of Surat. The ſecond tract of coaſt, which is more extenſive than this, in a fourfold proportion, is called *the coaſt of Concan*, or *the pirate coaſt*. To the ſouthward of this, the coaſt of the peninſula, all the way to Cape Comorin, receives the appellation of the *Malabar coaſt*. The firſt of theſe diviſions, lying upon the eaſtern ſhore of the gulf of Cambay, conſiſts of a low country, into which the rivers deſcend from the upper part of the peninſula of Hindoſtan. After paſſing Surat, however, the phyſical ſtructure of the peninſula aſſumes a peculiar character well worthy of attention. The Concan and Malabar coaſts which form almoſt the whole of the weſtern ſhores of the peninſula are extremely low, and a narrow ſtripe of level land, of from 40 to 50 miles in breadth, runs along the coaſt from Surat to Cape Comorin. At the back of this ſtripe of low land, a chain of mountains runs
47 Ghauts. parallel to the ſea ſhore. They are called *the Ghauts*, and riſe to a ſurpriſing height, oppoſing to the weſt a lofty wall of rugged and precipitous rocks. The whole chain ſeems one continued creſt or wall, inacceſſible to the ſummit, unleſs by paths which have been worked by the hand of man, and which cannot be aſcended, even by a ſingle traveller, without the fatiguing labour of many hours. From the root of theſe rocks, the plain towards the ſea is variegated with ſmall hills, which gradually deſcend into a level and fertile country, bleſt with a cool and healthy air. The ſmall hills near the foot of the Ghauts are clothed with foreſts of the moſt valuable timber; and from the ſides of the mountains magnificent cataracts deſcend, forming torrents which facilitate the conveyance of the timber to the ſea coaſt.

The word *Ghauts* ſignifies *paſſes*; but this name has been given to the whole front of rocks which overlooks the weſtern coaſt. At the ſummit of the Ghauts the country is level, and conſiſts of an elevated tract of fertile and populous plains, which are ſupported to the weſt by the Ghauts, as by the walls of a terrace formed on an immenſe ſcale. The country, however, begins gradually to deſcend towards the eaſt; and accordingly from Surat to Cape Comorin, the great rivers of the peninſula uniformly flow from the Ghauts eaſtward, and form conſiderable tracts of low rich land upon that coaſt, which receives the appellation of the *Coromandel coaſt*. Thus the weſtern peninſula of India muſt be conſidered as reſembling a plane, gradually inclining towards the eaſt, and ſupported on the weſt by a long chain of lofty rocks.

In the north-weſtern quarter of the peninſula, the
48 Nerbudda river. two moſt conſiderable rivers that flow into the gulf of Cambay, are the Nerbudda, in N. Lat. 23. 10. E. Long. 82. 10. which runs a courſe of 700 miles, from
49 Tapti. the centre of the northern part of the peninſula; and the river Tapti, upon which ſtands the celebrated city of Surat, in N. Lat. 21. 11. This city has long been well known as a place of great commerce. It is the port from which the Mahometan pilgrims ſail on their way to Mecca. The oldeſt Britiſh factory in India is in this city, and it is ſtill a place of the firſt commercial importance. Wheat grows in great abundance in the ſurrounding country, of equal quality with that of Europe, though it ſcarcely flouriſhes farther to the ſouth. Asia.

50 Coaſt of Concan, or Pirate coaſt On the coaſt of Concan or the Pirate coaſt, is the iſland of Bombay, containing a celebrated Britiſh ſettlement which need not here be noticed. The pirate coaſt contains a great variety of harbours, and is thus deſcribed by Mr Rennel: "Perhaps there are few coaſts ſo much broken into ſmall bays and harbours, and that at the ſame time have ſo ſtraight a general outline. This multitude of ſmall ports, uninterrupted view along ſhore, and elevated coaſts favourable to diſtant viſion, have fitted this coaſt for the ſeat of piracy; and the alternate land and ſea breezes that prevail during a great part of the year, oblige veſſels to navigate very near the ſhore. No wonder then that Pliny ſhould notice them in his time, as committing depredations on the Roman Eaſt India trade; and although a temporary check has been given them in the deſtruction of Angria's fleets, &c.; yet we may expect they will continue the practice while commerce laſts. They are protected by the ſhallowneſs of their ports and the ſtrength of the country within. As pirates, they have greater natural advantages than thoſe of Barbary, who being compelled to roam far from their coaſts, have expenſive outfets: here the prizes come to their own doors, and the cruizers may be ſecure in port until the prey is diſcovered."

In ancient times the Romans were obliged to put on board their merchant ſhips a number of archers, to defend them againſt the attacks of theſe pirates. In modern times the pirates have made a conſiderable figure, particularly under a chief called *Angria*, who was ſubdued by the Engliſh, and his port Gheriah taken. They ſometimes uſe veſſels of 300 tons with three maſts; but, in general, they are of 150 tons and only two maſts. Their cannon are ſix and nine pounders. They make prize of all that do not condeſcend to purchaſe their paſſports. As the Britiſh trade in theſe ſeas is carried on in large veſſels, it does not ſuffer from the pirates; but the ſhips of the Indians are much expoſed to their enterpriſes. It is ſaid, that the celebrated Hyder Ally eſtabliſhed a ſea port upon this
51 Mangalore. coaſt, at the town of Mangalore, with the view of accompliſhing a moſt grand but viſionary plan. He had Hyder Ally's project of invading England. formed the project not only of becoming ſovereign of the Indian ſeas, but even retaliating on the Britiſh the invaſions they had made into India. To become a naval power, he invited ſhipwrights from all countries, and under them trained his own ſubjects. He had heard ſomething of the effects of froſt in cold climates, and had formed ſome ſtrange ideas of the ſolidity and ſtrength, or hardneſs, of the waters of the European ſeas. Under the notion, therefore, of combating againſt oceans of ice, he ſtrengthened his ſhips with planks of great thickneſs. But his port was twice taken by Britiſh detachments. In 1768 a fleet from Bombay brought away from it nine great ſhips and ſeveral

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veral leſſer ones. In 1721, he had nearly fitted ſix ſhips of the line, and ſeveral frigates and ſloops of war, when the port of Mangalore was again opened.

52 Water ſnakes ſhew the vicinity of the Malabar coaſt.

It is to be obſerved, that the approach to this coaſt was formerly thought very dangerous. Ships were hurried forward by ſo rapid a current that they could neither keep their reckoning, nor diſtinguiſh the coaſt during the rainy ſeaſon. Many veſſels were conſequently loſt. Theſe misfortunes have ceaſed, ſince an obſervation was made of a fact noticed by Arrian in ancient times, that in the Indian ocean, at a certain diſtance from land, many water ſerpents, from 12 to 13 inches in length, are to be ſeen riſing above the ſurface of the water. When theſe ſerpents are ſeen, they indicate that the coaſt is preciſely two degrees diſtant. This coaſt of Concan was anciently denominated the *Lymirica regio*. It was greatly frequented by Roman merchants, and is thus ſpoken of by Arrian: "Originally they performed only coaſting voyages from harbour to harbour, ſailing from Cana, on the coaſt of Arabia Felix, till Hippalus, an adventurous ſeaman, having conſidered the ſituation of the harbours and the form of the ſea, found out a navigation through the ocean, at the ſeaſon in which the winds blow with us from the ſea, and the weſt-ſouth-weſt wind prevails in the Indian ocean, which wind is called *Hippalus*, from the firſt diſcoverer of that navigation. From that time till now, ſome ſail in a direct courſe from Cana, others from the harbour of the Aromati: they who ſail for Lymirica make a longer ſtay; others who ſteer for Barygaza or Scythia, ſtay not above three days; they ſpend the reſt of the time in completing their uſual voyage."

53 Malabar coaſt.

Southward of Mangalore, all the way to Cape Comorin, this ſhore receives the appellation of the *Malabar coaſt*. It contains ſeveral towns, the firſt of which is Tellicherry: From the ſhore to the Ghauts, the country here and elſewhere is extremely beautiful. Pepper is the chief article of commerce; but coffee is alſo cultivated. There are various other towns of note, particularly Mahi, originally a French ſettlement, Calicut, Canganore, Cochin, and Ajenga. The interior of the level country to the foot of the Ghauts, is covered with fine foreſts, both here and in Concan, which

54 Teek wood.

contain that moſt valuable of all treaſures for the navigation of the Indian ſea, the teek wood, which deſerves particular attention. It is an evergreen, and eſteemed a ſacred tree. The Gentoos repair or build their pagodas with this timber only, when timber is at all uſed. Its property of reſiſting the worm, which in theſe climates is ſo deſtructive to all ſhips, renders it of the utmoſt importance. Mr Rennell ſpeaks in the following terms of it: "I cannot cloſe this account, without remarking the unpardonable negligence we are guilty of in delaying to build teek ſhips of war for the uſe of the Indian ſeas. They might be freighted home without the ceremony of regular equipment, as to maſts, ſails, and furniture, which might be calculated juſt to anſwer the purpoſe of the home paſſage at the beſt ſeaſon, and crews could be provided in India. The letter annexed, which was written with the beſt intentions nine or ten years ago, will explain the circumſtances of the ſame caſe. Teek ſhips of forty years old and upwards, are no uncommon objects in the Indian ſeas, while an European built ſhip is ruined there in five years. The ſhips built at Bombay are the beſt, [illegible] adjoining to the [illegible] there is no [illegible] conſtructed, as [illegible] build capital ſhips in their foreign ſettlements. The Eaſt India Company have a [illegible] at preſent, which [illegible] fore, any objection [illegible] the teek timber, is done away.

Asia.

"I cannot have been the opportunity [illegible] of obſerving how very [illegible] of European timber is in the Eaſt Indies; and, on the contrary, how durable the ſhips are that are built of the wood of that country, namely, the teek, which may not be improperly ſtyled *Indian oak*. The number of ſhips of war that were ruined in thoſe ſeas during the late war (1757 to 1762), may be conſidered as a proof of the former remark; and the great age of the ſhips built in India may ſerve to prove the latter. What I mean to infer from this for your lordſhips uſe is, that ſhips of war under third rates may be conſtructed in India, and, with moderate repairs, laſt for ages; whereas a ſhip of European conſtruction can remain there but a very few years; to which diſadvantage may be added, that of loſing, in the mean time, the ſervices of the ſhips that are ſent to relieve the worn-out ones."

55 Laccadive iſles.

To the weſtward of the Malabar coaſt, at the diſtance of ſeveral leagues, are the Laccadive iſles. They extend from latitude 10° to 12° 50′ north. They are ſuppoſed to be the iſles mentioned by Ptolemy, under the title of *Inſulæ numero* 19; though in fact they are 32 in number. They are ſmall, and covered with trees. They have ſome trade. They export the product of the cocoa trees, that is to ſay, the oil extracted from the nut, and cordage formed of the rind. They alſo export dried fiſh to the continent of India, and receive rice in return. Ambergreaſe is frequently found floating near theſe iſlands. At a conſiderable

56 Maldives.

diſtance from the Laccadives are the Maldive iſlands. They extend from N. Lat. 1. to 7. 25. From their number, Ptolemy calls them *Inſulæ* 1378. The natives make the number of their iſles amount to 12,000. They are divided into 13 provinces under one king, whoſe ſubjects are miſerably poor. He aſſumes, however, the magnificent title of *ſultan of the Maldives, king of* 13 *provinces, and* 12,000 *iſles*. But theſe iſles, whatever their number may be, are extremely trifling. A fiſhery, however, is carried on in their vicinity; and they produce cocoa nuts, which, with the cordage produced from that uſeful tree, are ſold upon the weſtern coaſt of India. Theſe iſles are chiefly worthy of notice, on account of one article obtained from them: this is the cowry, a ſmall ſpecies of [illegible] of Linnæus. Theſe ſhells, which appear to be produced in the Maldives alone, have been uſed as current coin for ages paſt in different parts of the world. The ſhells are collected twice in the month, at the full and new moon, by the women, who wade into the ſea for that purpoſe up to their middle. They are packed up in parcels of 12,000 each, and are uſed as current money among the poor in Bengal. As proviſions are exceedingly cheap in that country, it [illegible]

shells.

Asia. solutely neceſſary to employ, for the uſe of the common people, ſomething leſs valuable than any coin formed of metal. Theſe ſhells or cowries ſerve this purpoſe. One cowry is rated in Bengal at the hundredth and ſixtieth part of a penny. Eighty cowries make a pun; and from 50 to 60 puns are equal to a rupee, or four ſhillings and ſixpence Britiſh money. In Africa, in the country of the negroes, upon the rivers Niger, Senegal, and Gambia, theſe cowries alſo paſs as current money; but at about ten times the value that they bear in Bengal. Hence, the Engliſh, French, and Dutch, are induced to purchaſe them in India, and to bring them to Europe, from whence they are afterwards exported for the purpoſes of trade; and thus, an uſeleſs ſhell, brought from the miſerable iſlands of which we are now ſpeaking, comes to be ultimately employed to purchaſe the perſons of men.

53 Cape Comorin. Cape Comorin is the moſt ſouthern part of this peninſula, and conſequently of Hindoſtan. It is in N. Lat. 8°. A little to the north of this cape, the Ghauts terminate. The ſea adjacent to it is conſidered by the natives as ſacred, and perſons reſort thither to perform ablutions and luſtrations. From this point the land turns towards the north-eaſt, along the gulf of Manara, which is between the main-land and the iſland of

59 Ceylon. Ceylon. This iſland was known to the ancients, by the name of *Taprobana*. Pliny treats very particularly concerning it, and the Arabian geographers of a later age give it the name of *Serendib*. It is rich in almoſt all mineral productions excepting the diamond, and poſſeſſes a fertile ſoil. On account of the cinnamon which it produces, the Portugueſe made themſelves maſters of the whole of its ports. In 1656, they were expelled by the Dutch; who had been invited thither by the monarch of the iſland, to reſcue him from the ſtate of dependance in which he was held by the Portugueſe. The emperor repaid the Dutch in cinnamon, all the expence of their efforts in his favour; and in return, ſpeedily found himſelf in the ſame dependant ſtate as before his victories over the Portugueſe. The cunning Dutchmen obtained from him a grant of coaſt, round the iſland, 12 miles in breadth, reckoning from the ſea; and under pretence of defending him from foreign invaſions, they fortified every one of his ports. Having thus hemmed in his majeſty, theſe good allies had it at all times in their power, by refuſing to ſell him ſalt, to compel him and his ſubjects to ſubmit to any terms they were pleaſed to dictate.

It is to be obſerved, that the natives of this iſland differ totally in their language, and in a conſiderable degree in their religion, from the inhabitants of the neighbouring continent. They are worſhippers of Budho or Gaudma, who they believe came upon earth for the ſalvation of mankind. They have many pagodas or temples, which are richly carved. Between the iſland of Ceylon and the continent, at the narroweſt part of the ſtrait, is a chain of rocks which runs entirely acroſs the channel. The length of the chain is about 30 miles, but the whole is frequently interrupted by narrow paſſages, which however are extremely ſhallow. It is very probable that this ſucceſſion of rocks, at ſome period, formed part of an iſthmus, which united Ceylon to the continent. Pliny takes notice of the greeniſh caſt of this ſhallow part of the channel, of its being filled with ſhrubs, that is, with corals. On each ſide of the chain of rocks, the water does not exceed for ſome diſtance the depth of 13 or 14 feet. The chain of rocks which we have now mentioned, is called by the Mahometans *Adam's Bridge*. Their tradition is, that our common father, after his tranſgreſſion, was caſt down from paradiſe, which they underſtand to have been celeſtial, and not terreſtrial as we do; that he fell upon Ceylon; but that afterwards this bridge was made by angels, to enable him to paſs over to the continent. The higheſt mountain of the iſland, which is of a conical form, is called *Adam's Peak*. On the ſummit is a flat ſtone, with an impreſſion reſembling a human foot, which is two feet long. The Mahometans ſay that it is the mark of Adam's foot; that he fell from paradiſe on this ſummit, and that Eve fell near Judda in Arabia. They were ſeparated 200 years, after which he found his wife, and conducted her to his old retreat in Ceylon, where he died and was buried, and where two large tombs remain, which are viſited by Mahometan pilgrims. But the Pagan inhabitants of the iſland, aſcribe the mark of the foot to their great deity Buddo, Budho, or Gaudma, when he aſcended into heaven. To this ſummit therefore they alſo make pilgrimages, and here they offer ſacrifices, which by an ancient cuſtom, deſcriptive of a very tolerant ſpirit, they give to the Mahometan pilgrims.

Aſia. 60 Adam's bridge. 61 Adam's peak.

62 Ceylon reliquiſhed to Britain. This fine iſland, with the valuable ſpices and other riches which abound in it, is now relinquiſhed by the Dutch in favour of the Britiſh: and it remains to be ſeen, whether the natives will find their independence increaſed by this new alteration of the protectors of their coaſt, and the purchaſers of their cinnamon; or whether the monarch and his people will not as uſual be kept under controul, by the aid of the monopoly of ſalt, an article of immenſe importance in hot climates where vegetable food is chiefly uſed.

From Cape Comorin north-eaſtward to Cape Calmere, in N. Lat. 10°. 20′. is above 220 miles. The country is watered by frequent ſtreams from the north-weſt, that is, deſcending from the eaſtern ſide or ſummit of the Ghauts. At Cape Calmere what is properly called the *Coromandel coaſt* begins. In the ſouthern part of it is the pearl fiſhery, which has been well known and practiſed during ſeveral ages.

63 Coromandel coaſt.

64 River Cavery. Around Cape Calmere, is the delta of the river Cavery, which proceeding from the ſouth of the Ghauts, near the weſtern ſhore of the peninſula, there forms an extenſive tract of low and fertile land, well ſuited to the cultivation of rice, the grain beſt ſuited to hot climates. This delta formed what was called the *kingdom of Tanjore*, now a province belonging to the Britiſh Eaſt India Company. The river is at one place divided by an iſland called *Seringham*, upon which are two pagodas or Indian temples, one of which is perhaps the moſt famed in Hindooſtan for its ſanctity, magnitude, and the vaſt reſort of pilgrims, who go to it from all quarters. Mr Orme gives the following deſcription of this ſacred retreat. "It is compoſed of ſeven ſquare enclоſures one within the other, the walls of which are 20 feet high, and four feet thick. Theſe enclоſures are 350 feet diſtant from one another, and each has four large gates with a high tower, which are placed, one in the middle of each ſide of the enclоſure, and oppoſite to the four cardinal points. The outward wall is near four miles in circumference, and its gateway to the

65 Pagoda of Seringham.

Aſia. the ſouth is ornamented with pillars, ſeveral of which are ſingle ſtones 35 feet long, and nearly five in diameter; and thoſe which form the roof are ſtill larger. In the inmoſt enclоſures are the chapels. About half a mile to the eaſt of Seringham, and nearer to the Caveri than the Coleroon, is another large pagoda called *Jumbakiſtna*, but this has only one enclоſure. The extreme veneration in which Seringham is held, ariſes from a belief that it contains the identical image of the god Wiſtchnu, which uſed to be worſhipped by the god Brachma. Pilgrims from all parts of the peninſula come here to obtain abſolution, and none come without an offering of money; and a large part of the revenue of the iſland is allotted for the maintenance of the Brahmins who inhabit the pagoda; and theſe with their families formerly compoſed a multitude not leſs than 40,000 ſouls, maintained without labour by the liberality of ſuperſtition. Here, as in all the other great pagodas of India, the Brahmins live in a ſubordination which knows no reſiſtance, and ſlumber in a voluptuouſneſs which knows no wants; and ſenſible of the happineſs of their condition, they quit not the ſilence of their retreats to mingle in the tumults of the ſtate, nor point the brand flaming from the altar, againſt the authority of the ſovereign, or the tranquillity of the government."

66 Tranquebar and Pondicherry. Upon the ſame coaſt, is ſituated the ſmall Daniſh ſettlement of Tranquebar; to the northward of which is Pondicherry belonging to the French, part of which, at a conſiderable diſtance, the Britiſh ſettlement of Madras ſucceeds. Near Pondicherry, the bird called the *vulture* is frequently found. This animal is well known to feed upon dead or putrid carcaſes. A ſingular circumſtance concerning it has been obſerved in every age in the eaſtern countries, that though very rare in a particular quarter, yet when two hoſtile armies approach to give battle to each other, the air is ſuddenly ſeen filled with multitudes of them, flying with their uſual ſluggiſh wing, from every quarter, to partake of the carnage. Hence in former times they were ſuppoſed to poſſeſs a prophetic inſtinct, or preſage of battle, which led them to ſeek the ſpot of future ſlaughter three days before the event. To this opinion Milton alludes, when he compares the great enemy of mankind to one of theſe birds.

67 Vultures.

——"As when a flock
Of ravenous fowl, though many a league remote,
Againſt the day of battle, to a field
Where armies lie encamp'd, come flying, lur'd
With ſcent of living carcaſes deſign'd
For death, the following day, in bloody fight;
So ſcented the grim feature, and upturn'd
His noſtril wide into the murky air,
Sagacious of his quarry from afar."

Paradiſe Loſt, book x. l. 273.

Between Pondicherry and Madras, the river Paliar enters the ſea. Upon this river, about 66 miles above its mouth, ſtands the city of Arcot, the *Arcati regia Sorœ* of Ptolemy, and *Soro-mandalam*, corrupted into the modern *Coromandel*, giving name to the whole coaſt.

68 Kriſtna. At a conſiderable diſtance to the north is the great river Kiſtnah or Kriſhna, in Lat. 15. 43. It riſes near the weſtern Ghauts, and like all the other rivers of this extenſive coaſt annually overflows a vaſt tract of country. Into the north ſide of this river, in Lat. 16. 20. flows a great ſtream called the *river Beema*, which alſo riſes at the head of the Ghauts, within 50 miles of the other ſide of the peninſula. It runs a courſe of 350 miles. To the north of the river Kriſhna is the celebrated and once powerful kingdom of Golconda, abounding in corn, rice, cattle, ſheep, and every neceſſary of life; alſo in fiſh, which are found in the numerous rivers, which in ſome places are in a great meaſure formed by art. Dams are made acroſs the hollows between hills ſometimes half a league in length. Theſe are filled during the rainy ſeaſon; and the inhabitants introduce the water as it is wanted into the lower country, which, aſſiſted by the heat of this climate, produces prodigious fertility.

69 Godavery. The river Godavery is the next great ſtream upon this eaſtern coaſt of the peninſula. Like the others, it riſes near the weſtern coaſt, and flows towards the eaſt. It is joined by another great river called the *Bain-gonga*. The delta of this river is of vaſt fertility, enriched by the ſoil brought down by the periodical inundations. To this river ſucceeds a flat coaſt, which, unlike the more ſoutherly parts of this eaſtern ſide of the peninſula, has behind it, at ſome diſtance inland, a barren lofty chain of rude and almoſt inacceſſible mountains. The part of the coaſt betwixt the ſea and theſe mountains is called the *Circars*. To the northward the country deſcends regularly towards the eaſt, as throughout the reſt of the peninſula. In general, however, it is loft and marſhy, though fertile. This country was known in the time of Pliny. It is now called *Oriſſa* or *Orixa*, and was in his time ſaid to be the ſeat of the *Gangaridæ Calingæ*, whoſe monarch was very powerful, being able to bring into the field 70,000 foot, 1000 horſe, and 500 elephants. Beyond this part of the Indian territory, at ſome diſtance, the mouths of the Ganges begin, forming the extremity of the bay of Bengal, and of the eaſtern ſide of this peninſula.

70 Ganges. The Ganges is the moſt celebrated of all the eaſtern rivers, being in every part of its courſe held ſacred by the original inhabitants of the country. It periodically overflows an immenſe extent of fertile territory, formed by the depoſition of mud, which in the courſe of ages it has brought down from the higher country. Compared to this mighty ſtream, the Egyptian Nile ſinks into inſignificance, and the fertility which it produces is trifling. So completely is the whole of this country formed by the alluvions of its river, that there is not a ſtone quarry on the banks of the Ganges for the ſpace of 500 miles. The depth of the river to that diſtance is 30 feet. Immediately at the mouth, however, it is obſtructed by the mud brought down by its own floods, ſo that its eaſtern or true channel cannot be entered by large veſſels. The channel called the *Hoogly river*, upon which the city of Calcutta ſtands, is the moſt uſeful of its mouths, being that which is entered by large veſſels, though even at the mouth of this branch great danger is experienced from numbers of longitudinal banks at its entrance, formed by the mud or ſand brought down and depoſited there by the waters of the river. There are ſome other branches alſo which may be entered during the rainy ſeaſon, or at its cloſe. At the great

71 Hoogly.

tract.

Aſia. traſt which faces the bay is a collection of flat iſlands, divided by a labyrinth of canals covered with trees, and forming altogether a foreſt as large as the principality of Wales. The head of the delta is 220 miles from the ſea in a ſtraight line. The numerous channels which paſs through it in every direction, form a complete inland navigation along the lower parts. Ships ſail amidſt a foreſt divided into numberleſs iſles by a continual labyrinth of channels, ſo various in breadth that a veſſel has at one time her maſts almoſt entangled in trees, while at another ſhe paſſes uninterruptedly along a capacious river beautifully ſheltered with woods. The woods, however, are dreadfully infeſted by tigers, to which the pious Hindoos, when coming on a pilgrimage, to waſh themſelves in the ſacred ſtream, are apt to fall a prey.

72 Source of the Ganges.

It has been already mentioned, that this great river riſes in the ſouthern part of the high central region of Aſia. The territory round its ſource is called the *kingdom of Thibet*, and is in about Lat. 33. 10. From thence the Ganges proceeds to a conſiderable diſtance weſtward, among lofty and ſavage mountains, after which it precipitates itſelf into a vaſt and deep chaſm, from which, at a great diſtance, it eſcapes after a courſe in all of 800 miles from its origin, and enters at once, as from a ſecond ſource, into the vaſt and fertile plains of Hindooſtan. Through theſe it runs navigable with an eaſy and ſmooth current 1320 miles, till it reaches the ſea. The place at which it emerges through a gap or diviſion of the lofty Imaus, or ſouthern front of Tartary, is called *Hurdwar*. In this neighbourhood the mountains are covered with lofty ſpires of ice, overlooking the torrid plains of India. Into the Ganges flow multitudes of great rivers from each ſide, which give a matchleſs inland navigation. It receives in its courſe through the plains eleven rivers, ſome of which are equal in ſize to the Rhine, and none leſs than the Thames. It maintains 30,000 boatmen by the carriage of ſalt and food for ten millions of people in the province of Bengal, and all this independant of its fiſheries, and of its different exports and imports. Where it paſſes through valleys which require not the aid of its inundations to aſſiſt the fertility of the ſoil, the country is defended by vaſt dikes, which are kept up at an enormous expence. One branch of the Ganges is thus confined for the extent of 70 miles, ſo that when the river is full, paſſengers in ſhips and boats look down on each ſide as from a lofty eminence into the adjacent country. Its waters are periodically increaſed by the tropical rains, and by the melting of the ſnows in the mountains of Tartary adjacent to its ſource; it then aſſumes the appearance of a ſea of almoſt boundleſs extent. When the rains ſubſide the water quickly paſſes away, and in its ſtead there ſuddenly aſcends to view a fertile country, which, by the rapidity of tropical vegetation, is almoſt inſtantly covered with corn fields and other plantations, ſome of the iſlands of the Ganges producing three or four crops yearly.

73 Jumna.

The moſt important of the rivers which join the Ganges is the Jumna from the ſouth. It proceeds through a very fertile country; and Delhi and Agra, the ancient Mogul capitals, are ſituated upon it. Though the waters of the Ganges are in every part held ſacred, yet they are doubly ſo at their junction with the Jumna, which is alſo accounted ſacred. The city, which ſtands at the junction or forks of the two rivers, is therefore called *Allahabad* or *the City of God*. At ſome diſtance below this is the city and diſtrict of Benares, the great ſeat of the Hindoo ſciences, in which the Brahmins inſtruct immenſe numbers of pupils in their religion, contained in books written in, what is now a dead language, the Sanſcrit. Many other great cities ſtand upon this river, of which it is unneceſſary here to take notice. The whole country naturally enjoys extreme fertility, and being poſſeſſed by an induſtrious people it abounds with inhabitants. Aſia.

74 Bootan.

To the north-eaſt of Bengal, which is the province at the mouth of the Ganges, the high country of Bootan is ſituated, near the foot of the mountains that overlook the plains of Hindooſtan. Here the great chain of Emodus, caped with eternal ſnow, ſhows itſelf to the inhabitants of Hindooſtan, over the leſſer hills which guard its approach. On the eaſtward of the Ganges the river Burrampooter alſo falls into the bay of Bengal. This river is ſuperior to the Ganges in ſize and in extent of courſe. It riſes, like it, in the ſouthern part of the high region of Tartary, but flows eaſtward; and as its channel lies among rugged rocks and mountains, inhabited only by ſcattered and barbarous tribes, it is of little renown, and till lately was unnoticed by ſtrangers, though its mouth is cloſe to the mouth of the Ganges. It has only been diſcovered to be a firſt-rate river ſo late as the year 1765. Beyond the lower part of the Burrampooter Hindooſtan ſpeedily terminates to the eaſt, at a narrow chain of mountains running from north to ſouth, the laſt province receiving the appellation of *Chittagong*. This province proceeds only to a ſhort diſtance ſouthward along the eaſtern ſhore of the bay of Bengal.

75 Burrampoo-ter.

The great country of Hindooſtan, from the Panjab and the courſe of the Indus on the weſt, to the lower part of the Burrampooter and Chittagong on the eaſt, and from the front of Tartary on the north to Cape Comorin on the ſouth, has undoubtedly from the moſt diſtant ages been one of the moſt fertile and populous regions on the globe. Its civilization runs back to the remoteſt periods, and the monuments of ancient magnificence which it exhibits are innumerable. When Alexander the Great invaded the weſtern part of it, he found it, as it now is, filled with an induſtrious, wealthy, and civilized people, poſſeſſing the ſame religion and manners as at preſent. In its original ſtate it does not appear that India, like China, was ever united under one government, unleſs when ſubjected to a foreign yoke. It would ſeem to have been divided into a great number of independent principalities, and it has always had a tendency to fall back into that ſtate, a circumſtance which has rendered its different parts an eaſy prey to foreigners. The Hindoos are a mild and humane people; but they are at the ſame time an extremely inactive, timid, and feeble race of men, patient of inſults and injuſtice, ſo that all invaders have been able to ſubdue them. A Tartar conqueſt introduced the Mahometan religion and a feudal government into their country, and changed their language for that of Perſia, though to this day the Mahometans are only as one to ten of the population. The Britiſh alſo coming from an iſland of the Weſtern ocean, have, with a handful of men, been able to become their maſters. A remnant, indeed, of Hindoo independence exiſts

76 Character of the Hindoos.

Asia. exists in what are called the *Mahratta states*, upon the summit of the Ghauts in the western part of the peninsula; but this independence they will not probably be long able to preserve. Even in the ordinary exertions of life, the Hindoos act like men destitute of energy. As carpenters, for example, they perform their work with much neatness and dexterity, but they employ small and light tools, which to men of a more vigorous character and habit, appear contemptible; and when an ordinary beam is to be turned over, an assistant labourer must give his aid, of which an European workman would not perceive the necessity; but the Hindoos living in a country in which labour is extremely cheap, are accustomed to supply by numbers their own deficiency of energy of mind or of strength of body.

A general imbecility of character seems indeed to mark this nation, or an incapacity to make any vigorous effort of self-command. In matters of intellect they are slaves of imagination and of education. On the banks of the Ganges, in a fertile climate, in which human life is easily sustained, and the constitution naturally prone to indolence, a superstition has been invented which seems to have proved a source of the greatest misfortunes to the nation. Not only is the imagination filled, and the exercise of the understanding injured, by endless legends or tales about the transfiguration of their divinities, but a set of ceremonies and regulations is introduced which places every part of life under controul. The whole people are divided into tribes or hereditary casts. A member of one of these casts cannot marry into a different cast without contracting impurity, and being for ever dishonoured or driven out of his tribe. A Hindoo is not permitted by his religion to eat with a stranger, or even to drink water that has been drawn by impure hands, that is to say, by persons belonging to a different cast. One cast only, the Rajaputes, are permitted to eat animal food, but the rest are compelled by their religion to live upon vegetables alone. Endless minute observances in their eatings are also imposed upon them, founded on the notion of the possibility of contracting pollution in this way. Thus are the Hindoos, though a mild and humane race, rendered in the most ordinary actions of life, the most unsocial as well as the most irrational of mankind. Being occupied at every moment by some religious ceremony or other, and filled with the dread of pollution, they appear contemptible to those strangers whom they avoid as profane or impure. From the impossibility, in this manner imposed upon them, of uniting in any respect with the Tartars who conquered their country, they have sunk into a degraded and despised race; whereas, could they have united or mingled with the invaders, they must speedily have become as one people, and the evils resulting from conquest would gradually have been forgotten. They have persevered for ages in the same intellectual errors, because they have got possession of their imaginations, and because they want energy to cast off any habit or train of thought to which they have once submitted.

The Hindoos appear to be no less destitute of self-command in their active than in their intellectual powers. Hence arises the unbounded superiority in all military enterprises which the Europeans possess over them. The attack of their armies is thus described by an ingenious writer: "It may perhaps afford some measure of gratification to [illegible], to be informed, that the undisciplined troops of Asia, generally inflamed with *bang* and other intoxicating drugs, pour forth, as they advance, a torrent of hideous and abusive language on their adversaries. Every expression of contempt and aversion, every threat, fitted to make any impression of terror, or to excite ideas of horror, that custom readily presents or inventive fancy can suggest, accompanies the utmost ferocity of looks, voice, and gesture. A murmuring sound, with clouds of dust, announce their approach, while they are yet at the distance of several miles. As they advance, their accents are more and more distinctly heard, until at last, with their eyes fixed and weapons poised at some individual, they devote him, with many execrations, to destruction, giving his flesh, like the heroes in Homer and the Philistine warriors, to the dogs, and the birds of the air, and the beasts of the field. The numbers of the Asiatic armies, the ferocity of their manner, and the novelty of their appearance, would unnerve and overcome the hearts of the small European bodies that are opposed to them in the field of battle, if experience had not sufficiently proved how much the silence of discipline excels barbarian noise, and uniformity of design and action, the desultory efforts of brutal force, acting by starts, and liable to the contagion of accidental impression."

Indeed the superiority of Europeans over Hindoos is so great, that it is never balanced by almost any difference in point of numbers. If a body of European troops is only sufficiently numerous to cover a tolerable extent of ground, so that one part of them may rest while the other is on guard, and that advantage may be taken of the victory when gained, the event of the war is uniformly unfavourable to the feeble natives of this region. There seems to exist a defect in their moral nature, to which military discipline cannot afford a remedy. An European gentleman, though a stranger to the use of arms, if called upon by what he accounts his honour or his duty, is able, with an unchanging countenance, to meet the hazard of instant death, and can take the chance of giving or receiving destruction with little passion, and without exhibiting the external symptoms either of anger or of fear. The case is different with the mild and timid inhabitants of Hindoostan; they cannot meet danger with coolness and recollection, but are under the necessity of working themselves into a rage, which enables them to rush upon perils which they are unable calmly to encounter. Thus their fury is irregular and fruitless, like that of men under the influence of intoxication; while at the same time, if their passion decline for an instant, they are seized with sudden terror, and under its influence sometimes rush into greater perils than they wished to avoid. They possess throughout their country fortresses situated upon elevated and precipitous mountains, or surrounded by works of art of [illegible] solidity and strength. Many of these fortresses, under defence, would prove absolutely impregnable, and in this ardent climate the armies of their northern invaders might perish miserably before them; but these fortresses the Hindoos have been utterly unable to defend. They cannot long remain coolly and without passion on the defensive; in some moment or other of weakness they become

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become panic-ſtruck, and all is loſt. They caſt themſelves headlong from the ſummit of the walls, and ſometimes, having murdered their wives and children, they caſt themſelves upon the weapons of their antagoniſts; finding death in this manner, though the agitation that accompanies their blind fury prevents them from finding revenge for their calamities.

77 What advantages ariſe from an intercourſe with Hindooſtan.

In every age, the inhabitants of Hindooſtan, who want nothing from the reſt of mankind, have received the gold and ſilver of other nations in return for the precious productions of their favoured ſoil: the ſugar, the ſpices, the gems, and the valuable manufactures of the country, have at all times been ſought, either by commerce or by conqueſt. But excepting theſe productions of nature, or of art, it does not appear that any valuable advantages can be derived from an intercourſe with the people. Notwithſtanding the high antiquity of their civilization, they are inferior in every branch of ſcience to ourſelves. Their moral and political ſpeculations are extremely trifling, ſo far at leaſt as has hitherto been diſcovered. Their poetry may have its beauties, but it undoubtedly equals not the productions of the north-weſtern regions, that is, of Europe. It is probable, that the only branch of valuable knowledge which could be improved by an intercourſe with the people of theſe countries is, that which concerns the conſtruction of different machines, or the performance of proceſſes connected with the various parts of manufacturing, agricultural, or domeſtic economy. They are underſtood to poſſeſs ſeveral machines of wonderful ſimplicity, and to perform many proceſſes in an eaſier and leſs expenſive mode than we are accuſtomed to do in Europe. They uſed, from time immemorial, the drill plough, which with us is a late invention. Their hand-mills for grinding grain are at once ſimple and effectual; as alſo their proceſs of diſtillation. It ought to be recollected by the European nations, that they are but of yeſterday when compared with the Hindoos; though we have outrun them in the career of intellect, or of general ſcience, yet the improvement of the proceſſes and inſtruments connected with the economy of ordinary life requires various ſucceſſive experiments, which can only be performed during a great length of time, eſpecially if theſe proceſſes are not uſually performed by perſons converſant in the higheſt walks of literature. All newly invented machines and proceſſes are apt to be complex, expenſive, and imperfect. It is only after repeated trials and alterations that they are reduced to that ſimplicity which conſtitutes their excellence. Ample leiſure has been allowed for theſe trials and improvements in the civilized nations of the Eaſt; and the ſimplicity of their machines, which deducts from their apparent importance, ought to be regarded as their perfection. They were probably invented by more ingenious men than thoſe who now uſe them, and they probably had the ſame imperfections by which ours are at preſent affected; but ſucceeding generations gradually improved them, and they have at laſt come down into the poſſeſſion of a degenerate race, incapable of diſcerning the value of tools in whoſe conſtruction there is no ſeeming intricacy, though their gradual progreſs to the preſent ſtate may have required much exertion from ſucceſſive minds poſſeſſed of great energy and ingenuity. We may take the liberty to ſuggeſt, therefore, to ſuch of our countrymen as have occaſion to reſide for any length of time among this ancient people, that one of the moſt valuable ſervices which they can perform to ſociety in Europe might conſiſt of executing and tranſmitting accurate deſcriptions of the different tools and machinery made uſe of by the Hindoos, and of the proceſſes uſed by them in the different branches of their domeſtic economy and management. The diſcovery of the ancient code of Roman law at Amalfi in Italy, together with the introduction of Grecian literature after the taking of Conſtantinople by the Turks, gave to the European nations immenſe aſſiſtance in their progreſs to civilization, by exhibiting to them the practices and the ſentiments of a former enlightened age, and thereby abridging their labour in the purſuit of intellectual improvement. A ſimilar aid, or abridgment of the labours of invention, would in all probability be derived from a minute acquaintance with the practices and machinery employed with ſucceſs during ſo many ages in the economy of Hindoſtan.

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78 Eaſtern peninſula of India.

Leaving this mild, but timid and feeble race of men, we paſs to the eaſtern peninſula of India, a narrow part of which ſtretches under the name of Malacca to within two degrees of the equator. Before advancing to the main land, however, we may notice towards the ſouth-eaſtern part of the bay of Bengal a group of iſles called the *Andamans*, chiefly remarkable on account of the ſingular people by whom they are inhabited. They are the northern diviſion of a number of ſmall iſlands, ſtretching from 10° 32′ to 13° 40′ N. Lat. and from 90° 6′ to 92° 9′ E. Long.: the ſouthern diviſion of theſe iſles is called the *Nicobars*, inhabited by a mild and inoffenſive people. What is called the *Great Andaman*, the chief of the northern diviſion of iſlands, is 140 miles in length, and 20 in breadth. A ſettlement was eſtabliſhed upon it by the Britiſh in 1793, and convicts are tranſported thither from Bengal. All that voyagers have related of uncivilized life is ſaid to fall ſhort of the barbariſm of the people of Andaman. The ferocious natives of New Zealand, or the ſhivering half-animated ſavages of Terra del Fuego, are in a ſtate of refinement, compared to theſe iſlanders. The population of the Great Andaman and its dependencies amounts to little more than 2000 ſouls, whoſe ſole occupation it is to rove along the margin of the ſea in queſt of a precarious meal of fiſh, which during the tempeſtuous ſeaſon they often ſeek in vain. In ſtature, the Andamaners ſeldom exceed five feet. Their limbs are diſproportionably ſlender, their bellies protuberant, with high ſhoulders and large heads; and, ſtrange to find in this part of the world, they are a degenerate race of negroes, with woolly hair, flat noſes, and thick lips. Their eyes are ſmall and red; their ſkin of a deep ſooty black; whilſt their countenances exhibit the extreme of wretchedneſs, a mixture of famine and ferocity. They go quite naked, and are inſenſible of any ſhame from expoſure. Two young women, allured by the temptation of fiſh, were ſecured, and brought on board a ſhip at anchor in the harbour. The captain treated them with great humanity: They ſoon got rid of all fear of violence, except what might be offered to their chaſtity, which they guarded with unremitting vigilance. Although they had a ſmall apartment allotted to themſelves, and had no real cauſe for apprehenſion,

79 Andaman iſles.

Symes's E baſſy to A

Aſia. henſion, one always watched while the other ſlept. They ſuffered clothes to be put on, but took them off again as ſoon as opportunity offered, and threw them away as uſeleſs incumbrances. When their fears were over they became cheerful, chattered with freedom, and were inexpreſſibly diverted at the ſight of their own perſons in a mirror. They were fond of ſinging, ſometimes in melancholy recitative, at others in a lively key; and often danced about the deck with great agility, ſlapping their poſteriors with the back of their heel. Wine and ſpirituous liquors were diſagreeable to them; no food ſeemed ſo palatable as fiſh, rice, and ſugar. In a few weeks, having recovered ſtrength, and become fat, from the more than half-famiſhed ſtate in which they were brought on board, they began to think confinement irkſome, and longed to regain their native freedom. In the middle of the night, when all but the watchmen were aſleep, they paſſed in ſilence through the captain's cabin, jumped out of the ſtern windows into the ſea, and ſwam to an iſland half a mile diſtant, where it was in vain to purſue them, had there been any ſuch intention; but the object was, to retain them by kindneſs, not by compulſion; an attempt that has failed on every trial. Hunger may (and theſe inſtances are rare) induce them to put themſelves in the power of ſtrangers; but the moment that want is ſatisfied, nothing ſhort of coercion can prevent them from returning to a way of life more congenial to their ſavage nature. The few implements they uſe are of the rudeſt texture; a bow from four to five feet long; the ſtring made of the fibre of a tree, or a ſlip of bamboo, with arrows of reed, headed with fiſh bone, or wood hardened in the fire, is their principal weapon. Beſides this, they carry a ſpear of heavy wood ſharply pointed, and a ſhield made of bark, to defend themſelves from the aſſaults of their enemies; for even theſe poor wretches have rights to aſſert and dignities to maintain. Neceſſity has taught them an expert management of their arms, on which they rely for ſubſiſtence. Happily for them, their numerous bays and creeks abound with fiſh, which they ſhoot and ſpear with ſurpriſing dexterity. They are ſaid alſo to uſe a ſmall hand-net made of the filaments of bark: the fiſh, when caught, are put into a wicker baſket, which they carry on their backs. Having kindled a fire, they throw the food on the coals, and devour it half-broiled. A few diminutive ſwine are to be found in the ſkirts of the foreſts, and among the mangrove thickets in the low grounds; but theſe are very ſcarce, and are probably the progeny of a ſtock left by former navigators. When a native has the good fortune to ſlay one, he carefully preſerves the ſkull and teeth, to ornament his hut. They croſs the bays, and go to ſea, either in canoes formed of a hollow tree, or on rafts of bamboo, which they direct by paddles. Their habitations diſplay little more ingenuity than the dens of wild beaſts; four ſticks ſtuck in the ground are bound together at the ſtop, and faſtened tranſverſely by others, to which branches of trees are ſuſpended; an opening is left on one ſide, juſt large enough to admit of entrance:—leaves compoſe their bed. Being much incommoded by inſects, their firſt occupation in a morning is to plaſter their bodies all over with mud, which, hardening in the ſun, forms an impenetrable armour. They paint their woolly heads with red ochre and water. When thus completely dreſſed, a more hideous appearance is not to be found in human form. Aſia.

Although their principal food conſiſts of fiſh, yet they eagerly graze on whatever the paſtures yield. Lizards, grubs, rats, wild hogs, apes, and monkeys, are all conſidered as equally delicious repaſt. The vegetable diet of the Andamanese conſiſts of the natural produce of the woods, in which the reſearches of Europeans find little that is palatable or nutritious. The fruit of the mangrove is principally uſed, having often been found in their deſerted habitations, ſteeping in an earthen pot full of water. As they have no pot or veſſel that can bear the action of fire, they cannot derive much advantage from ſuch eſculent herbs as the foreſts may contain; indeed, their extenuated and diſeaſed figures too plainly indicate the want of wholeſome nouriſhment. Unhappily for them, the cocoa-nut, which thrives in the utmoſt luxuriance in the neighbouring iſles, is not to be found here; but they are extremely fond of it; and whenever a nut was left in their way by the ſettlers, it was immediately carried off with much apparent ſatisfaction.

There are ſeveral kinds of trees on the iſland; among which are, the *Ficus religioſa*, or banyan tree, the almond tree, and the oil tree; which latter grows to a great height, and from it a very uſeful oil is thus produced:—A horizontal inciſion being made in the trunk, ſix or eight inches deep, a chip fourteen or fifteen inches long is cut at right angles, and the ſurface of the inciſion being hollowed and filled with live coals, the turpentine, or wood oil, exudes copiouſly from the top of the wound. The peniagre tree is alſo found, and is well adapted for the knees of ſhips; and the iron tree, of ſtupendous ſize, whoſe timber almoſt bids defiance to the axe of the woodcutter: the red wood, which makes beautiful furniture, little inferior to fine mahogany. Beſide these, [illegible] and rattans which ſurround the ſtems of the larger trees, and, interwoven with [illegible], form ſo thick a hedge, that it is impoſſible to penetrate far into the foreſts, but by the ſlow and laborious proceſs of cutting a road.

It is a ſort of hiſtorical myſtery how a race of negroes ſhould be here found, a people ſo widely differing, not only from all the inhabitants of that vaſt continent in which the iſland of Andaman is ſituated, but alſo from the natives of the Nicobar iſlands, which are immediately contiguous to it. Some have ſuppoſed, that a Portugueſe veſſel, early in the ſixteenth century, laden with ſlaves from Africa, may have been caſt on theſe ſhores, and that the preſent Andamanese are the deſcendants of ſuch as eſcaped drowning. This conjecture, however, is [illegible] an account of the Andamanese given by the Malay travellers, long before the navigation of thoſe ſeas by Europeans. But an accident ſimilar to that ſuggeſted may poſſibly, at ſome period or other, have occurred to the Andaman iſland, [illegible] known to have exiſted even ſo early as the ſeventh century; and they certainly exhibit the appearance of Indians ſo far as the Oriental ſun, and climate gained a [illegible] Europeans.

Returning from theſe iſlands to the province called *Chamba* [illegible] the [illegible] on the eaſt of the Bay of Bengal [illegible] Company's poſſeſſions, as well as the boundary to the eaſtern part of Hindoſtan, we enter upon the [illegible] of which

Aſia. of India. From Chittagong, proceeding ſouthward along the eaſtern ſhores, the coaſt is fertile and rich for a conſiderable diſtance within land, forming the ancient kingdom of Aracan. Parallel to the coaſt runs a chain of lofty and precipitous mountains, forming the boundary of Aracan to the eaſtward. Beyond theſe mountains eaſtward is a level and fertile country, containing rivers which, deſcending from the regions of High Tartary already mentioned, deſcend ſouthward along the peninſula, fertilizing the ſoil by their periodical floods, and forming at their mouths a great extent of low and fertile territory, or delta land. The country to the ſouth-eaſt of Aracan is called *Pegu*; that to the eaſt has long been called *Ava* by Europeans, from the name of the former capital, but is called by the people of the country, *Birmah*, and the people themſelves *Birmans*. This laſt people, the Birmans, have recently ſubdued both of the kingdoms called *Pegu* and *Aracan*, and form at the preſent period a riſing empire of great importance in the eaſt, and well deſerving our attention. Though their territories are only divided from thoſe of the Britiſh Eaſt India Company by a narrow chain of mountains, and at one place by a trifling river called the *Naaf*, yet it was only very lately that they were at all known to the Europeans in that quarter as a neighbouring power of any conſideration, our connexion with them having formerly been merely in the way of commerce carried on from their ſouthern ports, near the mouth of the bay of Bengal. The following circumſtance gave riſe to farther inquiries concerning them:—The trade of Aracan had ſuffered by the attacks of ſome robbers, or pirates, who infeſted the rivers near the coaſt. They conveyed their plunder acroſs the river Naaf into the Chittagong province, where, being ſecured from purſuit under the protection of the Britiſh flag, they diſpoſed of their ſpoils to advantage, and lived at eaſe till returning want impelled them to reſume their predatory excurſions. On its being aſcertained that three of the moſt diſtinguiſhed of the robbers had ſought refuge in the Britiſh diſtricts, the king or emperor of the Birmans ſent one of his officers into the Eaſt India Company's territories at the head of 5000 men, with injunctions to the commander to bring with him the delinquents, dead or alive, and not to return without them. To ſupport this detachment, an army of 20,000 men was held in readineſs at Aracan.

So Aracan.

81 Birmah.

82 Birman army enters the Britiſh territory in India.

Senee Nunda Kiozo, the Birman chief, having croſſed the river Naaf, and encamped within the Company's territory on the weſtern bank, ſent a letter to the Britiſh magiſtrate of Chittagong, acquainting him of the reaſons for the inroad; that the ſeizure of the delinquents was his ſole object, without harbouring any deſign of hoſtility againſt the Engliſh. At the ſame time he declared, that, till the delinquents were given up, he would not depart from the Company's territory. In confirmation of this threat, he fortified his camp with a ſtockade. Theſe matters being reported to the Britiſh government at Calcutta, the refugees were ordered to be apprehended and kept in cuſtody; and, in the mean time, detachments of Europeans, and of Indian troops in their ſervice, called *Sepoys*, with proper artillery, were ſent to the ſpot under Major General Erſkine. On the approach of General Erſkine, the Birman general ſent a flag of truce to propoſe terms of accommodation, ſtipulating for the ſurrender of the fugitive pirates as the baſis of the agreement. It was replied, that no propoſal could be liſtened to while the Birmans continued on the Britiſh territory; that, unleſs they departed from it in a limited time, force would be uſed; but that, if they would withdraw peaceably, the ſubject of their complaints would be diſcuſſed. On receiving this anſwer, the Birman chief, with a manly confidence in the character of his antagoniſts, which commanded reſpect, perſonally waited on General Erſkine, and ſtated the nature of his inſtruction, the enormity of the offenders, and the outrages they had committed. General Erſkine aſſured him that the Britiſh government had no deſire to afford an aſylum to robbers; that it had no objection to do juſtice; but inſiſted, that in the firſt inſtance, the Birmans ought to retire peaceably from the Britiſh territory. The Birman general, in conſequence of theſe aſſurances, profeſſed his reliance on General Erſkine, and agreed to withdraw his troops. The retreat was conducted in the moſt orderly manner; and ſo ſtrict was the diſcipline of the Birman army, that not one irregular act was committed while they remained within the Company's territory. The charges againſt the refugees were afterwards inveſtigated, and their guilt being clearly eſtabliſhed, they were delivered over to their own laws, by whoſe ſentence two out of the three underwent capital puniſhment.

Aſia.

This event called the attention of the Britiſh government in India towards the Birmans, a people evidently of a ſuperior character to the Hindoos, whoſe territory was in their vicinity, and with whom, by their ſouthern ports, a very extenſive commerce had within a few years ſprung up; which, in the ſingle article of teek-wood, already required an annual return of Indian commodities to the amount of 200,000l. ſterling. It therefore appeared a matter of importance to enter into ſomething in the nature of a commercial treaty with this power, at leaſt to the effect of obtaining regular protection for our merchants when viſiting their ports. With this view, and to obtain farther intelligence concerning the nature of the government, the character of the people, and the advantages to be derived from intercourſe with them, the governor general of Bengal, Sir John Shore, ſent by ſea to the principal Birman port a regular embaſſy; at the head of which was Michael Symes, Eſq. then a captain in the Britiſh army. From the information obtained and publiſhed in conſequence of this embaſſy, the following account of the Birmans and their empire is extracted.

83 Britiſh embaſſy to Birmans Vide *Symes's embaſſy*.

As already noticed, the Birman empire extends along the weſtern coaſt of the eaſtern peninſula of India, or forms the eaſtern ſide of the bay of Bengal. It approaches the frontier of China on the north-eaſt, and is limited on the north by the rugged and mountainous country which forms the ſouth-eaſtern front of the high region of Tartary, being a continuation to this quarter of the great chain of Imaus. From the foot of that elevated region, this, like the weſtern peninſula of India deſcends gradually to the ſouth, and the rivers proceed in that direction till the largeſt of them terminate near Cape Negrais in the ſouth-eaſtern quarter of the bay of Bengal, where the coaſt turns ſuddenly eaſtward to a conſiderable diſtance; after which it proceeds as formerly to the ſouth. The principal

Asia.

cipal towns of the Birman empire ſtand upon the rivers; and the Britiſh embaſſy ſailed up the chief river, the Irrawaddy or Erabatty, to a great diſtance, till they reached Ummerapoora, the preſent capital of the Birman dominions.

84 History of the Birmans.

The Birmans and the people of Pegu have long been rival ſtates. The Birmans, though formerly ſubject to the king of Pegu, revolted about the middle of the ſixteenth century, and appear to have acquired a ſuperiority over the Peguers which continued down to about the year 1740. At that period a war took place, which was proſecuted on both ſides with ſavage ferocity; but as the Peguers, living to the ſouthward near the mouth of the navigable rivers already mentioned, had a conſiderable intercourſe with European traders, from whom they could purchaſe better arms than are manufactured in the eaſt, they gradually obtained a ſuperiority, and gained ſeveral victories over the Birmans in the years 1750 and 1751. Theſe advantages were ſo vigorouſly proſecuted, that in the year 1752 the Birman capital Ava was inveſted. The Birmans, diſpirited by repeated defeats, and probably ill commanded, after a ſhort ſiege Diveepdee, the laſt of a long line of kings, was made priſoner with all his family, except two ſons who eſcaped to Siam. Beinga Della, king of Pegu, left his brother Apporaza as governor of Ava, and carried to Pegu the captive Birman king. Thus a complete conqueſt appeared to be effected. The landholders and principal inhabitants of the country round Ava ſubmitted, and took an oath of allegiance to the king of Pegu, who in an inſolent proclamation, announced the annexation of the Birman country to the Pegu monarchy. In the mean time, a Birman of low extraction, Alompra, aſpired to become the deliverer of his country. He had ſubmitted like the reſt, and was continued by the conqueror in the command of an inconſiderable village, Monchaboo. Here he had no more than 100 devoted followers, upon whoſe intrepidity and fidelity he could rely. This village, like moſt of the Birman towns, was ſurrounded by a ſtockade. This he ſtrengthened and repaired, without awakening any ſuſpicion in the Pegu conquerors, who never ſuſpected that ſo inconſiderable a perſon would attempt a rebellion. In Alompra's village of Monchaboo there were no more than 50 Pegu ſoldiers, who treated the Birmans with great arrogance: Taking advantage of the indignation excited by ſome particular act of indignity, Alompra encouraged his followers to attack the Pegu ſoldiers, and he put every one of them to the ſword. Even after this act of rebellion, Alompra diſguiſed his intention with a view to gain time. He wrote to the brother of the Pegu king Apporaza, who had been left governor of Ava, expreſſing much humility and regret for what had happened, profeſſing his fidelity to the Pegu government, and repreſenting the maſſacre as the reſult of an accidental quarrel between the Pegu ſoldiers and the people of his village. Theſe aſſurances prevented vigorous meaſures from being taken with ſufficient ſpeed againſt him. Apporaza, having preſſing buſineſs at Pegu, left Ava under the government of his nephew Dotachew, with inſtructions to keep Alompra as a priſoner. Accordingly about a thouſand men were ſent to occupy Alompra's turbulent village, and to ſend himſelf to Ava. They expected no oppoſition, and came ill prepared for it. They were not a little diſconcerted to find the gates of the ſtockade around the village ſhut againſt them on their arrival, which was late in the evening; and at daybreak next morning they were ſuddenly attacked and routed by the Birmans. Alompra, having thus involved a ſmall party of his countrymen in rebellion againſt their conquerors, repreſented to them that there no longer exiſted for them any ſafety but in victory; that they could not be forgiven, and muſt reſolve to conquer or perish. He invited the Birmans of the neighbouring towns to join his ſtandard, and he found a ſmall number who were willing to embrace his apparently deſperate fortunes: with theſe he adopted the ſudden reſolution of marching towards Ava the Birman capital, before the numerous detachments of Peguers that were ſcattered over the provinces could be recalled for its defence. As he advanced, fame magnified his numbers. The governor of Ava, who had not more than 3000 men, was diſconcerted; and, deſpairing of ſucceſs, deſerted that city with his troops, and a few of his countrymen who remained behind him were put to death by the populace. Inſtead of advancing in perſon, Alompra now ſent his ſecond ſon Shembuan to take poſſeſſion of Ava. Theſe events occurred in autumn 1753. In conſequence of his firſt ſucceſs Alompra's reputation became unbounded. His countrymen everywhere revolted, and attached themſelves to him as their deliverer. The Pegu king was alarmed for the northern diſtricts of his own territory, in which the Birman population exceeded that of the Peguers. A large force was collected under Apporaza the Pegu king's brother. It conſiſted of an army, and of a numerous fleet of war boats, which ſailed up the Irrawaddy to reduce the inſurgents. He laid ſiege to Ava where Shembuan held out 40 days, till his father Alompra advanced to his aid. Apporaza raiſed the ſiege, and went to encounter Alompra. The conteſt was chiefly confined to the fleet; the armies only ſkirmiſhing on ſhore. Shembuan having advanced from the fort of Ava to attack the rear of the Peguers, they gave way and fled with precipitation, ſuffering great ſlaughter in their retreat. The Peguers, enraged by theſe misfortunes, put to death the dethroned monarch of the Birmans, together with all the principal men of his nation, to the amount of ſeveral hundreds, that were in their power, under pretence that they had been detected in a plot againſt their conquerors. This only rendered the mutual hatred of the nations more violent; and in ſeveral towns the Birmans roſe upon the Pegu garriſons, and maſſacred the whole of them.

85 Alompra, firſt of the preſent Birman dynaſty.

86 Alompra's rebellion.

87 Alompra's

88 Alompra aſpires to

In the mean time Alompra continued to improve his fortune, and avowedly endeavoured to eſtabliſh in his own perſon the ſovereignty of his country. When [illegible], the ſon of the late king attempted to return, he drove him back to his aſylum among the Siameſe. Towards the end of the year 1754 the Pegu king Beinga Della, with a conſiderable army, laid ſiege to Prome, a frontier town defended by a ſolid wall, a deep ditch, and a ſtrong ſtockade. The Birmans ſucceſsfully reſiſted a general aſſault, and the Peguers had recourſe to a blockade. Alompra ſent 36 war boats to the aſſiſtance of the town, which ſtands upon a river: the commander of theſe threw himſelf with a conſiderable ſupply of men and proviſions into the town, and ſent back his boats, only a few of which were taken. After

Asia. a farther delay of six weeks, Alompra arrived in person and attacked the Peguers both by land and water. Instead of keeping up a fire of musquetry as usual, the boats closed, and, after a desperate engagement, the Peguers abandoned the siege. The tide of success was now so completely turned, that the war was become defensive on the part of the king of Pegu. He retired to his capital, which being near the sea coast, the contest became a kind of maritime warfare in the mouths and creeks of the rivers; which last are extremely numerous in the low delta land near their mouth. At this time both the French and English were in possession of factories in the Pegu country, and both the Peguers and Birmans solicited the assistance of the strangers, being abundantly sensible that a few ships of burden furnished with guns would give a vast advantage to either party, in a contest against the war boats used in their country. In the course of the year 1755 both the French and English appear to have entered secretly into separate negotiations with each of the parties, and to have promised aid to each of them. Both of them ultimately broke faith with Alompra, and joined the people of Pegu. Notwithstanding this assistance, the Birman leader continued to enjoy a career of success. He was victorious on land, and the aid of the foreigners by water only produced a slight degree of embarrassment. At one time three English ships and one French ship assisted the Pegu force, consisting of 200 armed boats, while 10,000 men marched along with them as a land force; but the Birmans disconcerted the attack by a stratagem. With considerable ingenuity they constructed fire-rafts, consisting of a number of boats fastened together, and filled with combustibles. These rafts were floated with a strong spring tide to where the European ships lay at anchor, and directed with such skill and effect as to oblige them to slip their cables and remove, the French ship narrowly escaping destruction. Alompra at last succeeded in cutting off the communication between Pegu and the sea. A French ship coming to the assistance of the Peguers was taken by surprise; and as her papers proved the object of her voyage, her officers were put to death by the order of Alompra: other foreigners, however, particularly the English, taken in the important Pegu town of Syriam, were suffered to depart unmolested, though he had sufficient reason to complain of their countrymen. Alompra was at last, in consequence of his success in every quarter, enabled to lay siege to Pegu itself, the capital of his enemies. It was situated on an extensive plain, surrounded with a high solid wall, flanked by small towers, and strengthened on each face by demibastions equidistant. A broad ditch contained about three feet depth of water, and the pagoda of Shoemadoo, which will be afterwards described, served as a citadel. Circumvallation is a favourite mode of warfare with the Birmans, as they are almost destitute of cannon, and therefore trust rather to famine than to force. Having invested Pegu, and erected numerous blockades both to hem in the town, and to secure his own army against external attack, Alompra, in the month of January 1757, resolved to wait patiently till the want of supplies should bring the city into his power. After a siege of two months the numerous population of Pegu became mutinous in consequence of want. The king summoned a council of his family and chiefs, and proposed to sue for peace, on condition of being allowed to govern his country, consenting to do homage for it to the Birman monarch. The proposal was accepted by Alompra; but, as a preliminary, the Pegu king was under the necessity of surrendering to the conqueror his only unmarried daughter. For some days the peace seemed restored, and the besiegers and the besieged mingled with each other in amity; but Alompra, probably with a treacherous intention, having introduced some soldiers in disguise into the town, they were seized and put to death by order of the king of Pegu's nephew Choupavea. Hostilities recommenced, and at last the king of Pegu, who appears to have been a timid man, privately admitted the Birmans into the city, on condition that his own life should be spared; the town itself was delivered up to plunder.

89 Pegu taken.

Alompra, thus successful, extended his power over several surrounding provinces, and rendered Monchaboo, his original residence, the seat of imperial government. While upon an expedition to Cassay, a northern province of his empire, the Peguers revolted, but were defeated on his return. On this occasion he was led to suspect, that the persons belonging to a British settlement at the island of Negrais, had given assistance to the revolters: They were suddenly attacked, therefore, by his orders, in October 1759, and most of them destroyed. A few escaped in two vessels, the Shrewsbury and the Victoria. Alompra next made war upon his neighbours on the east, the Siamese, accusing them of assisting his enemies of Pegu, and of raising conspiracies against his authority. He undertook an expedition against the capital of Siam; the enemy harassed his march, but did not hazard a decisive engagement. In a month he reached the vicinity of the metropolis, which prepared to sustain a siege; but here the career of Alompra terminated. He was taken ill of a mortal disease, said to be a species of scrophula. He foresaw his end, and gave orders for an immediate attack; but he died on the 15th of May 1760, before he reached his capital. He was deeply regretted by his people, who admired his talents and his success, and regarded him as their deliverer from a foreign yoke. He is represented as having performed no less service to his country by the laws which he enacted, than by the battles which he fought. In particular, he reformed the administration of justice, prohibited magistrates to sit in judgment, unless in a public place, and required every decree to be registered. He also issued edicts against gaming, and the use of spirituous liquors in his dominions.

92 Massacre of the British.

91 War with Siam.

92 Death of Alompra.

The Birman law vests the right of succession in the eldest heir male; but, upon the death of Alompra, his second son, Shembuan, made an attempt to seduce the army and to seize the throne. Receiving little support, he submitted to his eldest brother, Namdogee Praw, who, at the request of their common mother, received him into favour. One of Alompra's generals, called *Nuttoon*, was a more dangerous rival. A division of the army under his command seized upon the city of Ava. He expected succours from Siam, but was disappointed: and being besieged in Ava, he was reduced to great distress. He tried to make his escape; but was taken and put to death with most of his adherents. The destruction of Nuttoon did not put an end

93 Alompra succeeded by Shembuan Namdogee Praw.

Asia. to the diſturbances that agitated the Birman empire. A younger brother of Alompra, who held a conſiderable government, aſpired to independence; but he alſo was taken in his fortreſs, after a ſiege of three months. His life was ſpared, but he was kept a cloſe priſoner. Namdogee Praw died at his capital in March 1764, of the ſame diſeaſe that brought his father to the grave, leaving one ſon, Momien, an infant. Shembuan, the ſecond ſon of Alompra, now ſeized the government as king; and the child of his elder brother was educated in religious obſcurity, as a rhahaan or prieſt. Shembuan's firſt undertaking was a war againſt the Siameſe, whoſe country, in the year 1765, he entered at different points with three armies; which, after ſome reſiſtance, effected a junction. Having approached the capital, a general battle was fought, in which the Birmans were ſucceſsful, and inveſted the capital of Siam. Each party had ſome artillery, with was of little ſervice; and the Birmans had recourſe to blockade, which as already noticed, is their favourite ſyſtem of warfare. After a two months ſiege, the king of Siam ſecretly made his eſcape. The city capitulated, and a Siameſe governor was appointed, who ſwore allegiance, and engaged to pay tribute to the Birman monarch.

94 Shembuan obtains the throne.

95 Invades Siam.

96 The Chineſe invade Birmah.

In the beginning of the year 1767, a Chineſe army invaded the Birman empire. Shembuan prepared to meet this danger; and it appears that, in conſequence of the numerous wars in which they had recently been engaged, the Birmans were enabled to act upon this occaſion with a conſiderable degree of military ſkill and energy. They formed two ſeparate armies; one conſiſting of 10,000 infantry and 2000 cavalry, was ſent to meet the invaders. They accordingly advanced, and encamped within eight miles of the Chineſe army. On the following day, an action took place in which the Birmans were worſted and retired. The Chineſe, elated by their ſucceſs, preſſed eagerly forward, and were in this manner drawn to a conſiderable diſtance into the country. In the mean time, a ſecond Birman army, amounting to 30,000 men, had taken a circuitous road, and got into the rear of the Chineſe. The army in front now made a ſtand, and the invaders found themſelves hemmed in on all ſides. The Tartar cavalry, on whoſe activity the Chineſe army depended for proviſions, would no longer venture out either to procure ſupplies or to protect convoys. The Birmans now attacked their enemy with impetuoſity, who reſiſted with reſolution founded on deſpair. The conflict laſted three days, and the Chineſe at laſt attempted to cut their way through the weakeſt part of the Birman line. This attempt proved fatal. The Birmans, ſure of being reinforced, maintained their ground till the troops of both their armies arrived to their aſſiſtance. The Chineſe now ſunk under the preſſure of an attack from numbers which were increaſing every hour. The carnage was dreadful, as the Birmans are extremely ferocious and unrelenting in war. Of the Chineſe army not a man returned to his native country. About 2500 were preſerved from the ſword and conducted to the Birman capital, where they were employed in ſuch occupations as they underſtood, without any other reward for their labour than a bare ſubſiſtence.

Meanwhile, Shembuan's ſucceſſes againſt the Siameſe were attended with no permanent advantage. His armies were no ſooner recalled than his authority was openly diſregarded. He [illegible] of his generals [illegible] into their country; but he met with [illegible] tions as compelled him to retire and to deſiſt [illegible] enterprize. The laſt [illegible] was conducted [illegible] a manner that produced [illegible] viceroys of the ſubject parts of the empire were commanded to raiſe the neceſſary ſupplies; but on his prohibition was inſtantly obeyed by [illegible] he had to [illegible] his mercenary [illegible] arms in their hands, than they became conſcious of their own ſtrength, and were fired with a deſire to regain their empire. They roſe upon their Birman officers and companions, and commenced an indiſcriminate ſlaughter. It was not till after an army of [illegible] was aſſembled, with 24 pieces of cannon, beſides a great number of war boats, that they could be ſubdued. While this was going on in the lower part of the empire [illegible] the people of Pegu, now emboldened as ſlaves, [illegible] and a plan of conqueſt to the north-weſt, in the country called *Caſſay*. His troops even penetrated within what are called the *Himmaleh hills*, which form a continuation of the lofty Imaus, and which deſcending towards the extremity of the bay of Bengal, ſeem to be a barrier raiſed by nature to protect the unwarlike inhabitants of Hindooſtan from the more hardy natives of the eaſt. Shembuan loſt a great number of troops in attacking the chiefs or rajahs of theſe hilly countries, but at laſt ſucceeded in [illegible] a great number of them, though the conqueſt could be of little utility, as poſſeſſion of theſe rude territories could ſcarcely be retained.

On his return from this north-weſtern expedition, Shembuan went ſouthward to viſit his Pegu territories, which had ſo recently been involved in civil war. On this occaſion he pretended to diſcover that the old king of Pegu, who had been taken by Alompra, and had remained all this while in priſon, had engaged in ſome kind of conſpiracy. In conſequence of an accuſation to his effect, the dethroned monarch underwent the form of a trial, was condemned and put to death. Many perſons of rank, of the race of the Peguers, were alſo put to death on this occaſion, under pretence that they had given countenance or aid to the late rebellion.

97 Old king of Pegu put to death.

These were among the laſt tranſactions of Shembuan's life. He died in the city of Ava, [illegible] middle of ſpring, in the year 1776. He was ſucceeded by his ſon Chenguza, who appears in every reſpect to have been incapable of exerciſing dominion with any tolerable degree of propriety. He degraded his father's moſt reſpectable officers, and plunged into the moſt ſhameful debauchery, which he avowed openly by repealing the edict againſt the uſe of ſpirituous liquors. He put to death a younger brother, from jealouſy of his ambition, employed himſelf wholly in hunting, and left public affairs to be managed by favourites. He alſo put to death one of his uncles, kept another of them cloſe priſoner, and watched vigilantly a third of them, who affected to live in the moſt inoffenſive obſcurity. In a fit of jealouſy, he alſo put to death his wife in a public and open manner, and having at laſt rendered himſelf both odious and [illegible]

98 Death of [illegible]

99 Chenguza ſucceeds to the throne.

Afia. was formed againſt him, at the head of which was his uncle Minderagee Praw, the reſult of which was, that the latter obtained poſſeſſion of the throne, and Chengoza, deſerted by all the world, was killed by the father of the wife whom he had put to death, though the ſlayer was afterwards alſo put to death, under pretence of having ſhed royal blood contrary to the expreſs letter of the law of the Birmans.

100 Minderagee ſucceeds to the throne.

Shembuan Mia Shean Minderagee Praw, the fourth ſon of the deceaſed Alompra, thus ſucceeded to the poſſeſſion of the empire. In the firſt days of the conſpiracy, a pretence had been made that the object of it was to raiſe to the throne Momien, the only child of Namdogee Praw the eldeſt ſon of Alompra; but this pretence was ſpeedily laid aſide, and in eleven days after his acceſſion to the throne, he was put to death. Minderagee Praw, notwithſtanding the manner in which he obtained the ſovereignty, is underſtood to have governed well, and he was upon the throne when the Britiſh envoy, Captain Symes, viſited that country. While he led a private life, however, this monarch is repreſented as having imbibed much of the ſuperſtition that ſo ſtrongly characterizes every form of religion in the eaſt. During his days of leiſure he had directed much of his attention to aſtronomy, and became a thorough believer in judicial aſtrology. Some few Brahmins, had for ages been accuſtomed to emigrate from Caſſay and Aracan, to Ava, where, on account of their ſuperior knowledge, they were employed as profeſſors of ſcience. A college was eſtabliſhed and lands appropriated for its ſupport. Theſe Brahmin doctors compoſed almanacks, calculating eclipſes; and from their intercourſe with the planets, pronounced the propitious hour and ſeaſon to attempt any momentous undertaking. Long before his elevation, theſe Brahmins had foretold to Minderagee Praw the fortune that awaited him. The accompliſhment of their prophecy confirmed their influence over him. He appointed a certain number to be his chaplains, who, on court days, arrayed in white robes and ſtanding round the throne, chaunt a ſolemn benediction in melodious recitative. This ceremony is performed as ſoon as the king aſcends the imperial ſeat, and before the commencement of public buſineſs. Prompted by the perſuaſions of his counſellors, Minderagee reſolved to withdraw the ſeat of government from Ava, and to found a new city.

101 New capital Ummerapoora.

The ſite fixed on for the projected ſettlement was judicious: about four miles north-eaſt of Ava, there is a deep and extenſive lake called *Toungemann*, formed by the influx of the river during the monſoon, through a narrow channel, which afterwards expands and diſplays a body of water a mile and a half broad, and ſeven or eight miles long. This lake firſt takes a northerly direction, nearly parallel with the river; it afterwards curves to the ſouth-eaſt, in a leſſening ſheet, and diminiſhes to a moraſs favourable to the culture of rice. When filled by the periodical rains, the lake with the river on one ſide, encloſes a dry and fertile peninſula, on which *Ummerapoora*, the name given to the new city, now ſtands. Buildings in the Birman country are compoſed for the moſt part of wood; and when a change being here convenient, the old town was ſpeedily demoliſhed, and the preſent capital roſe from its materials: whilſt ſuch was the aſſiduity and zeal, that Ummerapoora became, in a ſhort time, one of the moſt flouriſhing and well built cities of the eaſt. The fort likewiſe, which is ſpacious and regular, is completely fortified after the Aſiatic manner. A lofty rampart, protected by a parapet, and ſtrengthened by baſtions compoſed of excellent maſonry, is further ſecured by a deep and broad ditch, faced with brick and filled with water: the gateways are guarded by cannon, and retrenchments defend the paſſes of the ditch. The new monarch ſoon reſolved to extend his dominions weſtward, by the conqueſt of Aracan. This country, as already mentioned, is ſituated to the weſtward of Ava, along the ſhore of the bay of Bengal, but the direct road is embarraſſed by a chain of mountains 56 miles in breadth. The road is ſo difficult that an enterpriſing people might eaſily have defended the paſſes againſt any ſuperiority of number; but the Birman king knew too well the indolent character of the king of Aracan, and the unwarlike diſpoſition of his ſubjects, to dread any vigorous oppoſition. This country, however, had never been completely conquered: the Moguls on the weſt, the Peguers on the eaſt, and the Portugueſe from Europe, had at different times carried their arms into the heart of the country, but after theſe paſſing inroads Aracan had always recovered its independence. The difficulty of conqueſt, on the preſent occaſion, conſiſted chiefly of finding a way into a country ſo well defended by nature. The range of lofty mountains, already mentioned, nearly encircles it on the eaſt. From the ſouthern quarter at Negrais, Aracan could only be invaded by water, through the many rivers that interſect the country adjacent to the ſea. From the ſide of Chittagong, entry into Aracan muſt be effected by a march along the ſea beach, which is interrupted by ſeveral channels, that owe their waters chiefly to the action of the tide. The coaſt, however, is extremely well adapted to commerce, by the various large and well cultivated iſlands which it poſſeſſes, and the variety of channels by which veſſels can paſs into the country, which to the mountains is everywhere low and well watered. The trade of Aracan has not indeed been very conſiderable. It is confined to ſalt, bees wax, elephants teeth, and rice. This latter article is produced in ſuch abundance, that it might be improved into a lucrative branch of commerce. Poſſeſſion of Aracan and its iſlands is not only coveted by the Birmans, on account of the fertility of the ſoil, but alſo from the protection it might afford to their boats, which navigating along the coaſt make an annual voyage to Chittagong and Calcutta, where they diſpoſe of the produce of their country, and in return bring back cloth and the commodities of India.

Afia.

102 Invaſion and conqueſt of Aracan.

In the year 1783, the Birmans accompliſhed their intended invaſion, by attacking Aracan in different detachments, a part of which croſſed the mountains while others went round by water. After a naval engagement, which terminated in favour of the invaders, the king of Aracan took flight with his family; but being cloſely purſued, he was taken priſoner, and conducted to the Birman capital, where he was treated with humanity, but died in the courſe of a year. The town and port of Aracan fell after a faint reſiſtance. The booty found in it was conſiderable, but on nothing was a higher value placed, than on an image of burniſhed braſs of the god of the Birmans called *Gaudma*, or *Boodh*,

Asia. *Boodh*, or *Budhoo*. The figure is about 10 feet high in the cuſtomary ſitting poſture with the legs croſſed, the left hand reſting on the lap and the right pendent. This image is believed to be an original reſemblance, taken from life, and is ſo highly venerated, that pilgrims have for centuries come from the remoteſt countries, even Ceylon, China, and Japan, where the ſupremacy of Gaudma is acknowledged, to pay their devotions at the feet of his brazen repreſentative. There were alſo found five images of Rakuſs, the dæmon of the Hindoos, of the ſame metal and ſtature. Theſe were valued as guardians of the ſanctity of the idol. A ſingular piece of ordnance was alſo found of enormous dimenſions, compoſed of huge bars of iron beaten into form. This ponderous cannon meaſured 30 feet in length, two feet and a half in diameter at the mouth, and 10 inches in the calibre; it was tranſported to Ummerapoora by water, and depoſited in the yard of the royal palace, where it is now preſerved as a military trophy; it is mounted on a low carriage ſupported by ſix wheels, and is covered from the weather by a wooden pent-houſe. Gaudma and his infernal guards were, in like manner, conveyed by water to the capital, with much pomp and ſuperſtitious parade.

103 Aracan now a Birman province.

Since this period Aracan, with its dependencies, has conſtituted a province of the Birman empire, and is governed by a maywoon or viceroy. Birman troops are diſtributed in the different towns, and lands were granted to many Birmans, on condition that they ſhould come with their families and ſettle in the country. The valuable acquiſition of Aracan, did not ſatisfy the ambition of Minderagee Praw, and he ſpeedily turned his arms againſt the Siameſe, his neighbours on the ſouth-eaſt. From the year 1785 to 1793, he carried on againſt them a very ſanguinary war, in which he ſuffered a conſiderable number of defeats, though the Siameſe could make no progreſs againſt him upon his own territory. At length the Siameſe propoſed a negotiation, which terminated in a treaty of peace, very favourable to the Birman intereſts, as the Siameſe conſented to reliquiſh to them a conſiderable extent of territory to the ſouthward, on the weſtern ſide of the peninſula.

104 Extent of the Birman empire.

The reſult of all theſe acquiſitions is, that the Birman empire upon the whole, at preſent, appears to include the ſpace between 9° and 26° N. Lat. and between 92° and 107° E. Long. from Greenwich, or about 1050 geographical miles in length, and 600 in breadth. Theſe are ſtated as the aſcertainable limits taken from the Birman accounts, though it is thought that their territories ſtretch ſtill farther to the north; but it muſt be remarked, that in the ſouthern parts the breadth often varies, and is in many places very inconſiderable. On the whole, however, they poſſeſs a territory ſuperior in extent to the German empire. But their perpetual wars, eſpecially their ſanguinary conteſts with Pegu and Siam, have greatly depopulated their country; and here, as in every other part of the world, it has been found, that war, while it ruins the vanquiſhed, is ſeldom the ſource of internal proſperity to the victorious nation. From what can be diſcovered, there is no reaſon to believe that their preſent population, including Aracan, exceeds 17,000,000. Yet the ſoil of the ſouthern provinces of the Birman empire is remarkably fertile, and produces as luxuriant crops of rice as are to be found in the fineſt parts of Bengal; but extenſive plains, on which the veſtiges of former culture and population are diſcovered, remain without a ſingle houſe or inhabitant, having been depoſolated by the ravages of war, during the conteſts of Birmans and Peguers, ſo that the fineſt territories in the world have in many places of this empire become, for a time at leaſt, the undiſputed domain of the wild beaſts of the foreſt. In the northern parts of the empire, the country becomes irregular and mountainous; but the plains and valleys, particularly near the rivers, are exceedingly fruitful. They yield good wheat, and the various kinds of ſmall grain, which grow in warm climates, with the different ſorts of eſculent vegetables: ſugar canes, tobacco of ſuperior quality, indigo, cotton, and the different tropical fruits in perfection, are all natural products of this favoured land. Asia.

105 Climate.

The climate of every part of the Birman empire, is ſaid to teſtify its own ſalubrity by the beſt of all criterions, the appearance and figure of the natives, who appear equal in ſtrength and activity to any other race of men in the world. The ſeaſons are regular, and the extremes of heat and cold are ſeldom experienced; at leaſt the duration of that intenſe heat, which immediately precedes the commencement of the rainy ſeaſon, is ſo ſhort, that it incommodes but for a very little time. During the reſidence of the Britiſh embaſſy in the country, only one man was loſt by diſeaſe. Another met an accidental death; in wandering through the woods he became the prey of a tiger.

106

One of the moſt valuable productions of this empire [illegible] is the teek tree, which grows in vaſt abundance in the ſouthern parts of the empire, near the great rivers. This article alone renders a free commerce with the Birmans of vaſt importance to the Britiſh ſettlements in India. Teek wood, ſo abſolutely neceſſary for the navigation of the eaſtern ſeas, cannot be conveyed from the Malabar to the Coromandel coaſt of the weſtern peninſula of India, or to Calcutta, but at an expence ſo great as to preclude the attempt. This wood grows indeed on the banks of the river Godaverry, but the impediments to procuring it from that quarter have hitherto been found inſurmountable. Hence a great part of Britiſh India depends for ſhip-timber upon the Birman empire. Moſt other deſcriptions of timber are alſo found in this empire; on the banks of the river Irravaddy a large log of fir was ſeen by Doctor Buchanan, one of the gentlemen belonging to the embaſſy. He was informed by the natives that it had been waſhed down by the torrents from a mountainous part of the country northward of the capital, where it grows in abundance and of conſiderable magnitude. It is called *tænys*. The turpentine is extracted from it, and turned to uſe, but the wood is conſidered as of little value on account of its ſoftneſs. It will probably hereafter be brought to market in India, as top-gallant-maſts and yards made of teek are thought too heavy, and European and American ſpars are often bought for theſe purpoſes at a very exorbitant price.

107 Animals.

On account of the depopulation of various parts of the country by war, the wild animals have multiplied to a great extent. The moſt troubleſome of theſe are tigers, which infeſt all the foreſts, and what are called *jungles* or woody thickets near the banks of torrents, ſo as to render it dangerous to enter them: wild elephants alſo

Aſia. alſo abound, and occupy the foreſts in great numbers. Theſe powerful animals, allured by the early crops of rice and ſugar cane, make predatory excurſions in large troops, and do much miſchief, deſtroying more than they devour. The peaſantry have often to lament the deſtruction of their moſt expoſed plantations in conſequence of theſe inroads. Herds of deer are frequently ſeen, and horſes and cattle are reared in abundance by the people. They have alſo large herds of buffaloes, which have a powerful antipathy to a red or ſcarlet colour, and are ſo extremely fierce, that the tigers dare not attack them.

The two peninſulas of India are the native countries of the peacock, and alſo of our barn-door fowl; the latter abound in the jungles or thickets, and are well known to ſportſmen in India. They differ little from the barn-door fowl in Europe, except that the wild ſort are all ſimilar in colour; a dark red, with black breaſt and legs: their fleſh is very delicate.

108 Minerals. The Birman empire abounds in minerals. Near the frontiers of China they have mines of gold and ſilver; there are alſo mines of gold, ſilver, rubies, and ſapphires, at preſent open on a mountain near the river Keenduem; but the moſt valuable, and thoſe which produce the fineſt jewels, are in the vicinity of the capital. Precious ſtones are found in ſeveral other parts of the empire. The inferior minerals, ſuch as contain iron, tin, lead, antimony, arſenic, ſulphur, &c. are met with in great abundance; amber, of a conſiſtence unuſually pure and pellucid, is dug up in large quantities near the principal river. Gold likewiſe is diſcovered in the ſandy beds of ſtreams which deſcend from the mountains; diamonds and emeralds are not found in any part of the Birman empire, but it affords amethyſts, garnets, very beautiful chryſolites, jaſper, loadſtone, and marble. This laſt is equal in quality to the fineſt marble of Italy, and admits of a poliſh that renders it almoſt tranſparent; but it is not allowed to be ſold in its rude ſtate or in blocks, being held ſacred, and uſed only for the purpoſe of manufacturing images of Gaudma.

109 Petroleum wells. They have alſo wells of petroleum, which were viſited by the Britiſh envoy, who deſcribes his journey to them in the following terms: "Doctor Buchanan partook of an early dinner with me, and when the ſun had deſcended ſo low as to be no longer inconvenient, we mounted our horſes to viſit the celebrated wells that produce the oil, an article of univerſal uſe throughout the Birman empire. The face of the country was cheerleſs and ſteril; the road, which wound among rocky eminences, was barely wide enough to admit the paſſage of a ſingle cart; and in many places the track in which the wheels muſt run, was a foot and a half lower on one ſide than the other: there were ſeveral of theſe lanes, ſome more circuitous than others, according to the ſituation of the ſmall hills among which they led: vehicles going and returning were thus enabled to purſue different routes, except at particular places, where the nature of the ground would only admit of one road; when a cart came to the entrance of ſuch a defile, the driver hallooed out to ſtop any that might interfere with him from the oppoſite ſide, no part being ſufficiently wide for two carts to paſs. The hills, or rather hillocks, were covered with gravel, and yielded no other vegetation than a few ſtunted buſhes. The wheels had worn ruts deep into the rock, which ſeemed to be rather a maſs of concreted gravel than hard ſtone, and many pieces of petrified wood lay ſtrewed about. It is remarkable, that wherever theſe petrifactions were found, the ſoil was unproductive and the ground deſtitute of verdure. The evening being far advanced, we met but few carts; thoſe which we did obſerve were drawn each by a pair of oxen, and of a length diſproportionate to the breadth, to allow ſpace for the earthen pots that contained the oil. It was a matter of ſurpriſe to us how they could convey ſuch brittle ware, with any degree of ſafety, over ſo rugged a road; each pot was packed in a ſeparate baſket, and laid on ſtraw; notwithſtanding which precaution, the ground all the way was ſtrewed with the fragments of the veſſels and wet with oil; for no care can prevent the fracture of ſome in every journey. As we approached the pits, which were more diſtant than we had imagined, the country became leſs uneven, and the ſoil produced herbage; it was nearly dark when we reached them, and the labourers had retired from work. There ſeemed to be a great many pits within a ſmall compaſs: walking to the neareſt, we found the aperture about four feet ſquare, and the ſides, as far as we could ſee down, were lined with timber; the oil is drawn up in an iron pot, faſtened to a rope paſſed over a wooden cylinder, which revolves on an axis ſupported by two upright poſts; when the pot is filled, two men take the rope by the end, and run down a declivity which is cut in the ground to a diſtance equivalent to the depth of the well; thus, when they reach the end of their track, the pot is raiſed to its proper elevation; the contents, water and oil together, are then diſcharged into a ciſtern, and the water is afterwards drawn off through a hole at the bottom. Our guide, an active intelligent fellow, went to the neighbouring houſe and procured a well-rope, by means of which we were enabled to meaſure the depth, and aſcertained it to be 37 fathoms, but of the quantity of oil at the bottom we could not judge; the owner of the rope, who followed our guide, affirmed, that when a pit yielded as much as came up to the waiſt of a man, it was deemed tolerably productive; if it reached to his neck it was abundant; but that which roſe no higher than the knee was accounted indifferent: when a well is exhauſted, they reſtore the ſpring by cutting deeper into the rock, which is extremely hard in theſe places where the oil is produced. Government farm out the ground that ſupplies this uſeful commodity; and it is again let to adventurers, who dig wells at their own hazard, by which they ſometimes gain, and often loſe, as the labour and expence of digging are conſiderable. The oil is ſold on the ſpot for a mere trifle; I think two or three hundred pots for a tachal or half-a-crown. The principal charge is incurred by the tranſportation and purchaſe of veſſels. We had but half gratified our curioſity when it grew dark, and our guide urged us not to remain any longer, as the road was ſaid to be infeſted with tigers that prowled at night among the rocky uninhabited ways through which we had to paſs; we followed his advice, and returned, with greater riſk, as I thought, of breaking our necks from the badneſs of the road than of being devoured by wild beaſts. At ten o'clock we reached our boats without any miſadventure."

110 Character of the Birmans. The Birmans are very far from being in a ſtate of intellectual darkneſs. Though they have not explored

Aſia. the depths of ſcience, nor reached to excellence in the finer arts, they yet have an undeniable claim to the character of a civilized and well-inſtructed people. Their police is better regulated than in moſt European countries. In their natural diſpoſitions they are high-ſpirited, active, impatient and inflexible; but at the ſame time they are friendly and hoſpitable to ſtrangers, and their manners are rather expreſſive of manly candour than of courteous diſſimulation: a knowledge of letters is ſo widely diffuſed that there are no mechanics, few of the peaſantry, or even the common watermen, uſually the moſt illiterate claſs, who cannot read and write in the vulgar tongue; few, however, are verſed in their books of ſcience, which containing many Shanſcrit terms, and being often written in the Pali text, are (like the Hindoo Shaſters) above the comprehenſion of the multitude. The Birmans are not ſhackled by any prejudices of caſts like the Hindoos, reſtricted to hereditary occupations, or forbidden to participate with ſtrangers in every kind of ſocial connexion. Hence it is probable, that if a reſpite is allowed them from foreign wars, their progreſs in improvement will be rapid. They are a very ſober people, and though the activity of their character renders them fond of amuſements, yet multitudes of them are ſeen aſſembled together upon their public feſtivals, without one act of intemperance being committed or a ſingle inſtance of intoxication being perceived.

III Women. The laws or cuſtoms of the Birmans with regard to women contain a ſtrange mixture of reaſon and of abſurdity; on the one hand the women are allowed entire freedom, and are conſidered as of much importance, while in other reſpects they are treated with great contempt. The Birmans encourage all ſtrangers to marry Birman wives; even ſlaves taken in war who comply with this invitation, acquire conſiderable privileges. This cuſtom, in which theſe people agree with the wiſeſt and beſt governed nations of antiquity, is ſingular among the civilized countries of the eaſt, and peculiarly remarkable in a people ſurrounded by kingdoms where women are kept inviolably ſacred from the ſight and converſe of ſtrangers, and where the excluſive ſyſtem of caſts or tribes admits neither of civil nor religious proſelytiſm. Even the public proſtitutes in China are prohibited from having intercourſe with ſtrangers. The Hindoo women of rank are no leſs inacceſſible, and admiſſion into a reſpectable caſt is not to be obtained by money. The Birmans, on the contrary, ſenſible that the ſtrength of an empire conſiſts in its population, admit to their ſociety men of all religions and complexions, Pagans or Jews, Mahometans or Chriſtians, the diſciples of Confucius or the worſhipers of fire; the children of whom born of a Birman woman, are underſtood to be natural-born ſubjects of the ſtate, and are entitled to the ſame protection and privileges as if they had ſprung from a line of Birman anceſtry. Accordingly the jealouſy which prompts the eaſtern nations to immure their women within the walls of a haram, and to ſurround them with guards, ſeems ſcarcely to have any influence over the minds of this extraordinary people. Birman wives and daughters are not concealed from the ſight of men, and are ſuffered to have as free intercourſe with the world as the rules of European ſociety admit. A man can only marry one wife; but it appears that their men of rank take a ſecond in the character of a concubine, who is by law, however, obliged to attend and obey the lawful wife as a ſervant. Women are conſidered of ſo political importance, that great care is taken to prevent their being carried out of the country. The law in this point is very ſtrict; every boat that the receives her clearance, is obliged to be viſited by the officers of the cuſtom-houſe, even if their ſuſpicions were to be eluded, the women would be ſpecially noticed, and it would ſoon be diſcovered in what ſhip ſhe had gone, nor could that ſhip ever return to a Birman port but under penalty of confiſcation of the property, and the infliction of a heavy fine and impriſonment on the maſter: female children alſo, born of a Birman mother, are not ſuffered to be taken away. Men are permitted to emigrate; but they think that the expatriation of women would impoveriſh the ſtate, by diminiſhing the ſources of its population.

On the other hand, women are treated in many reſpects as not belonging to the ſame claſs of creatures as men; the evidence of a woman is not received as of equal weight with that of a man, and a woman is not ſuffered to aſcend the ſteps of a court of juſtice, but is obliged to deliver her teſtimony on the outſide of the roof. The lower claſs of Birmans make no ſcruple of ſelling their daughters, or even their wives, to ſtrangers who come to reſide among them for a ſhort time, and none of the parties are underſtood to be diſhonoured by the connexion. When the maſter of a family incurs debts which he cannot pay, his wife and daughters may be ſold as ſlaves for payment of his creditors. Near the great towns is a place, called *tackally*, in the ſuburbs, aſſigned to common proſtitutes, who are under the controul of a public ſuperintendant. He frequently purchaſes the unfortunate women, who are ſold for the payment of the debts of their relations, and makes gain by the proſtitution of them.

Still, however, domeſtic ſociety is on a very different footing among the Birmans from that in which it is placed among the other eaſtern nations, and the women take a much more active ſhare in the ſuperintendance of all affairs, as appears from the following anecdote, which fell under the obſervation of the Britiſh embaſſy, in the neighbourhood of whoſe reſidence a large ſhip was building for the governor of Maindu. "If this ſhip was not compoſed of prime materials, the building at leaſt was well attended to; every morning the governor's wife croſſed the river in her huſband's barge, attended by two or three female ſervants: after landing, ſhe commonly took her ſeat on one of the timbers in the yard, and overlooked the workmen for ſome hours; after which ſhe returned home, and ſeldom miſſed coming back in the evening to ſee that the day's taſk had been completed. The ſlip on which the ſhip was built happened to be contiguous to our firſt habitation, a circumſtance that cauſed us to remark her conſtant viſits; curioſity, however, did not prompt her, or any of her attendants, to come within our precincts, whilſt decorum deterred us from making advances towards an acquaintance. Her huſband never accompanied her, and ſhe did not ſeem to require his aid. Women in the Birman country are not only good houſewives, but likewiſe manage the more important mercantile concerns of their huſbands, and attend to their intereſts in all out-door tranſactions: they are indeed

Aſia. ous to the greateſt degree, and are ſaid to be good mothers, and ſeldom from inclination unfaithful wives."

112 Marriages. Marriages among the Birmans are not contracted till the parties attain the age of puberty. The contract is purely civil, and the prieſts have no interference in it. When a young man is deſirous to marry a girl, his mother, or neareſt female relation, firſt makes the propoſal in private. If the ſuit be ſucceſsful, a party of his friends proceed to the houſe of the parents of the maiden, and adjuſt the dowry. On the morning of the bridal-day the bridegroom ſends to the bride three loongees, lower garments; three tubbecks, or ſaſhes; and three pieces of white muſlin; alſo ſuch jewels, ear-rings, and bracelets, as his circumſtances admit of. A feaſt is prepared by the king's parents, and formal writings are executed. The new-married couple eat out of the ſame diſh. The bridegroom preſents the bride with ſome pickled tea, which ſhe accepts, and returns the compliment, which terminates the ceremony.

113 Politeneſs. The Birmans are extremely polite, but at the ſame time unceremonious in their manners. Their form of demonſtrating reſpect conſiſts of aſſuming a ſitting or low poſture. Accordingly, when perſons of rank viſited the Eaſt India's Company's ambaſſador, they no ſooner came into the apartment than they inſtantly took to themſelves chairs and ſat down, while their attendants aſſumed a low poſture, by reſting upon their hams in the eaſtern manner. Though the embaſſy was at firſt received with conſiderable diſtruſt by the government, yet the members of which it was compoſed were treated with the utmoſt politeneſs and perſonal reſpect, both by perſons in office and by all ranks of people. The curioſity with which they were viſited when at Pegu is thus deſcribed:—"Our hall in the morning was generally crowded, as every perſon of diſtinction in Pegu paid us the compliment of a viſit, except the maywoon, who, within the precincts of his own government, where he repreſents the king, never returns a viſit. Numbers both of men and women, prompted by harmleſs curioſity, ſurrounded the paling of the encloſure from morning till night: Thoſe of a better claſs uſually came in, ſome previouſly aſking permiſſion; but many entered without it. Perfectly free from reſtraint among themſelves, the Birmans ſcruple not to go into your houſe without ceremony, although you are an utter ſtranger. To do them juſtice, however, they are not at all diſpleaſed at your taking the ſame freedom with them. This intruſion is confined wholly to your public room: they do not attempt to open a door; and where a curtain dropped denotes privacy, they never offer to violate the barrier. On entering the room, they immediately deſcend into the poſture of reſpect. Of all our cuſtoms, none ſeemed to ſurpriſe them more than the preparations for dining: the variety of utenſils, and our manner of ſitting at a table, excited their wonder. They never took any greater liberty than merely to come into the room, and ſit down on the floor: they meddled with nothing, and aſked for nothing; and when deſired to go away, always obeyed with cheerfulneſs. Had untold gold been placed before them, I am confident not a piece would have been purloined." The behaviour of theſe people at another of their towns is thus mentioned: "The news of the miſſion had reached the place before we arrived, and excited a general curioſity to ſee the boomien of the colars, or the general of the ſtrangers, as they were pleaſed to denominate me. Not only the better claſs of the inhabitants of Meeaday came to viſit us, but likewiſe people of condition from all the towns and villages twenty miles round: I have ſometimes received eight or ten different companies in a morning. When a party wiſhed to be introduced, a meſſage was ſent to aſk permiſſion; which being obtained, they entered the room in a crouching poſition, and ſat down on their heels, men and women alike. They always brought a gift of ſomething, whatever they ſuppoſed might be acceptable; tobacco, onions, fine rice, &c. No company preſented themſelves empty handed: it would not have been reſpectful. Of courſe, their offerings drew from me a ſuitable return; ſuch as, fillets of Indian muſlin to the women, and a Coſſembuzar ſilk handkerchief to the men. Several parties of women came unaccompanied by their huſbands, or any of their male friends; and, according to the notions entertained by them, there was nothing indecorous in it: They were unconſcious of any thing but an innocent deſire to gratify curioſity and manifeſt reſpect. Women of a better claſs were always accompanied by a train of female attendants; and, like the ſex everywhere, were more lively, good humoured, and inquiſitive than the men." Aſia.

114 Amuſements. Among the public amuſements of this people are mentioned, boxing matches, fire-works, proceſſions, exhibitions of dancing; as alſo plays and puppet ſhows. Perſons of rank among them are fond of cheſs. This game is held in high eſtimation among the ſuperior ranks: the board they uſe is exactly ſimilar to ours, containing 64 ſquares, and their number of troops the ſame, 16 on each ſide; but the names, the power, and diſpoſal of them, differ eſſentially. The king and his miniſter (a queen is never introduced by the orientals) are mounted on elephants: theſe are defended by two caſtles or yettay; two knights on horſeback, mene; two officers on foot, one called *Meem*, the other *Chekey*; and eight maundelay or foot ſoldiers. The forces of each party are arranged on three lines, by which eight ſquares remain unoccupied: none of the pieces poſſeſs equal force with our queen; and this reſtricted operation renders the Birman mode of playing more complex and difficult than ours. The Birmans affirm that it is a game of high antiquity, and that it is acknowledged and authorized by their ſacred writings, although every play of chance is prohibited. This teſtimony confirms the opinion of the late Sir William Jones, that cheſs was invented in India, and is not, as generally imagined, of Perſian origin. The Birmans call it *chedreen*, a word that bears ſome reſemblance to the name which is given to the game in moſt other parts of the world.

115 Cheſs.

116 Throwin water on the laſt of the ye One of their amuſements deſerves attention, chiefly on account of its ſingularity and the good temper which it indicates. It is thus deſcribed by Mr Symes, who held the place of ambaſſador:—"On the 12th of April, the laſt day of the Birman year, we were invited by the maywoon to bear a part ourſelves in a ſport that is univerſally practiſed throughout the Birman dominions on the concluding day of their annual cycle. To wäſh away the impurities of the paſt, and commence the new year free from ſtain, women on this day are accuſtomed to throw water on every man they meet,

Aſia. meet, which the men have the privilege of retorting. This licenſe gives rife to a great deal of harmleſs merriment, particularly among the young women, who, armed with great ſyringes and flaggons, endeavour to wet every man that goes along the ſtreet, and in their turn receive a wetting with perfect good humour. Nor is the ſmalleſt indecency ever manifeſted in this or in any other of their ſports. Dirty water is never caſt. A man is not allowed to lay hold of a woman, but may fling as much water over her as he pleaſes, provided ſhe has been the aggreſſor; but if a woman warns a man that ſhe does not mean to join in the diverſion, it is conſidered as an avowal of pregnancy, and ſhe paſſes without moleſtation.

"About an hour before ſunſet we went to the maywoon's, and found that his lady had provided plentifully to give us a wet reception. In the hall were placed three large china jars, full of water, with bowls and ladles to fling it. Each of us, on entering, had a bottle of roſe water preſented to him, a little of which we in turn poured into the palm of the maywoon's hand, who ſprinkled it over his own veſt of fine flowered muſlin. The lady then made her appearance at the door, and gave us to underſtand that ſhe did not mean to join in the ſport herſelf, but made her eldeſt daughter, a pretty child in the nurſe's arms, pour from a golden cup ſome roſe-water, mixed with ſandel wood, firſt over her father, and then over each of the Engliſh gentlemen: this was a ſignal for the ſport to begin. We were prepared, being dreſſed in linen waiſtcoats. From ten to twenty women, young and middle aged, ruſhed into the hall from the inner apartments, who ſurrounded and deluged without mercy four men, ill able to maintain ſo unequal a conteſt. The maywoon was ſoon driven from the field; but Mr Wood having got poſſeſſion of one of the jars, we were enabled to preſerve our ground till the water was exhauſted: It ſeemed to afford them great diverſion, eſpecially if we appeared at all diſtreſſed by the quantity of water flung in our faces. All parties being tired, and completely drenched, we went home to change our clothes, and in the way met many damſels who would willingly have renewed the ſport; they, however, were afraid to begin without receiving encouragement from us, not knowing how it might be taken by ſtrangers; but they aſſailed Baba-ſheem and his Birman attendants with little ceremony. No inconvenient conſequences were to be apprehended from the wetting; the weather was favourable, and we ran no riſk of taking cold. Having put on dry clothes, we returned to the maywoon's, and were entertained with a dance and puppet ſhow that laſted till even.

117 Dreſs. The court dreſs of the Birman nobles is repreſented as very becoming. It conſiſts of a long robe of flowered ſatin or of velvet, reaching to the ankles, with an open collar and looſe ſleeves. Over this there is a ſcarf, or flowing mantle, that hangs from the ſhoulders, and on their heads they wear high caps of velvet, either plain, or of ſilk, embroidered with flowers of gold, according to the rank of the owner. Ear-rings are worn by the men; and ſome perſons of condition uſe tubes of gold about three inches long, and as thick as a large quill, which expands at one end like the mouth of a ſpeaking trumpet. Others wear a heavy maſs of gold, beaten into a plate, and rolled up. This lump of metal forms a large orif[illegible] in the lobe of the ear, and drags it dow[illegible] Aſia. times of two inc[illegible] d es a tight coat, with long ſleeves, [illegible] or of extremely fine muſlin, which [illegible] in the country; alſo a ſilk wrapper that encircles the waiſt. The working claſs are [illegible] to the middle, but in the cold ſeaſon, a mantle or veſt of European broad cloth is highly prized. The women tie their hair in a bunch at the top of the head. They bind it round with a fillet, the ornaments of which expreſs the rank of the wearer. A ſhort ſhift, reaching to the pit of the ſtomach, and drawn tight by ſtrings, ſupports the breaſts. Over that is a looſe jacket, with cloſe ſleeves. Round their waiſt they roll a long piece of ſilk or cloth, which reaching to their feet, and ſometimes trailing on the ground, encircles them twice, and is then tucked in. When women of condition go abroad, they wear a ſilk ſaſh reſembling a long ſhawl, which croſſes their boſom, and is caſt over the ſhoulders, ſo as to flow gracefully on each ſide. The loweſt claſs of females often wear only a ſingle garment in the form of a ſheet, which, wrapped round the body, and tucked under the arm, croſſes their breaſts, which it ſcarcely conceals, and deſcends to their ancles. Thus when they walk, the lower part of the cloth, where it overlaps, is opened by the protruſion of the leg, and diſplays to a ſide view as high as the middle of the thigh. Indeed, every woman when walking muſt ſhew a great part of her leg, as the lower part of their dreſs is never cloſed by a ſeam. Women in full dreſs ſtain the palms of their hands and their nails a red colour, by means of a vegetable juice, and ſtrew on their boſoms powder of ſandel wood, or of a bark called by them *ſunneka*, with which ſome rub their faces. Both men and women tinge the edges of their eyelids and their teeth with black.

118 Perſons of the people. The Birmans in their features have a nearer reſemblance to the Chineſe than to the natives of Hindooſtan. The women, eſpecially in the northern parts of the empire, are fairer than the Hindoo females, but not ſo delicately formed. They are inclined to corpulence, and their hair is black, long, and coarſe. The men are athletic and active, but not tall. They have a very youthful appearance, from the cuſtom of plucking out the hair of their beards inſtead of ſhaving. Girls are taught at an early age to turn their arms in ſuch a manner as to make them appear diſtorted. When the arm is extended, the elbow is inverted, the inſide of the joint being protruded, and the external part bending inwards.

119 Religion. With regard to religion, the Birmans are a ſort of Hindoos; not votaries of Brahma, but ſectaries of Boodh; which latter is admitted by Hindoos of all deſcriptions to be the ninth avatar or deſcent of the deity in his capacity of preſerver. He reformed the doctrines contained in the vedas, and ſeverely cenſured the ſacrifice of cattle, or depriving any being of life. He is called the author of happineſs: his place of reſidence was diſcovered at Gaya in Bengal, by the illuſtrious Amara, renowned amongſt men, "who cauſed an image of the ſupreme Boodh to be made, and he worſhipped it: Reverence be unto thee in the form of Boodh; reverence be unto thee, lord of the earth; reverence be unto thee an incarnation of the [illegible] and

Ava. and eternal one; reverence be unto thee, O God, in the form of mercy!"

Gotma, or Gautum, according to the Hindoos of India, or Gaudma, among the inhabitants of the more eaſtern parts, is ſaid to have been a philoſopher, and is by the Birmans believed to have flouriſhed above 2300 years ago. He taught in the Indian ſchools the heterodox religion and philoſophy of Boodh. The image that repreſents Boodh is called *Gaudma*, or *Gautum*, which is now a commonly received appellation of Boodh himſelf: This image is the primary object of worſhip in all the countries ſituated between Bengal and China. The ſectaries of Boodh contend with thoſe of Brahma for the honour of antiquity, and are certainly far more numerous. The Cingaleſe, that is, the original inhabitants of Ceylon, are Boodhiſts of the pureſt ſource; and the Birmans acknowledge to have originally received their religion from that iſland. It was brought, ſay the rhahaans, firſt from Zehoo (Ceylon) to Aracan, and thence was introduced into Ava, and probably into China; for the Birmans aſſert with confidence that the Chineſe are Boodhiſts.

This is a curious ſubject of inveſtigation; and the concurrent teſtimony of circumſtances, added to the opinions of the moſt intelligent writers, ſeem to leave little doubt of the fact. It cannot, however, be demonſtrated beyond the poſſibility of diſpute, till we ſhall have acquired a more perfect knowledge of Chineſe letters, and a readier acceſs to their repoſitories of learning. Little can at preſent be added to the lights caſt on the ſubject by the late Sir William Jones, in his diſcourſe delivered to the Aſiatic ſociety on the Chineſe. That great man has expreſſed his conviction in poſitive terms, that "Boodh was unqueſtionably the Fo of China," and that he was alſo the god of Japan, and the Woden of the Goths; an opinion which correſponds with, and is perhaps grafted on, the information of the learned and laborious Kæmpfer, corroborated afterwards by his own reſearches. On whatever grounds the latter inference reſts, it will not tend to weaken the belief of his firſt poſition, when I obſerve that the Chineſe deputies, on the occaſion of our introduction to the ſeredan, or high prieſt of the Birman empire, proſtrated themſelves before him, and afterwards adored an image of Gaudma with more religious fervour than mere politeneſs or acquieſcence in the cuſtoms of another nation would have excited. The bonzes alſo of China, like the rhahaans of Ava, wear yellow, as the ſacerdotal colour; and in many of their cuſtoms and ceremonies there may be traced a ſtriking ſimilitude.

120 Laws. The laws of the Birmans are connected with their religion, being contained in what they call the *Derma Sath*, or *Saſtra*, which is one of many commentaries on the writings of Menu, to whom, according to the Hindoos, the ſacred principles of their law were revealed by divine authority.

The Saſtra provides ſpecifically for almoſt every caſe of crime that can be committed, and adds a copious chapter of precedents and deciſions to guide the inexperienced. The Birmans agree with the Hindoos in one benevolent doctrine, the ſinfulneſs of depriving any creature of life to ſatisfy a carnivorous appetite; but the Birmans do not carry this branch of their religion to any ſcrupulous length, like the timid and ſuperſtitious natives of the weſtern peninſula. Merely to eat Aſia. fleſh is not deemed a crime by the Birmans, but he who eats it is not exempt from ſin, unleſs the creature died a natural death, or was ſlain by accident, or by other hands. But in every thing that concerns religion the Birmans are abundantly liberal. The prohibition to kill animals as objects of food is nowhere very ſcrupulouſly obſerved, except by the rhahaans or prieſts. In times of danger, or in conſequence of ſuperſtition, the king and his viceroys ſometimes iſſue proclamations, enjoining obedience to the ſacred law; but theſe produce little other effect than to cauſe the animals for a ſhort time to be killed with more ſecrecy than uſual; and wherever foreigners are in queſtion, both the government and the people are abundantly tolerant. The maywoon of Pegu, who ſent to the embaſſy large ſupplies of fruit, rice, oil, tamarinds, and ſpices, did not indeed offer any butcher's meat for the uſe of the table; but they were allowed to purchaſe and kill whatever they wanted, ſuch as, fowls, kid, and veniſon. When they had advanced farther into the country, a private intimation was given to the ambaſſador, that there would be no crime if a ſervant of his ſhould kill a fat bullock when he met one; that it would be aſcribed to accident, and reparation might be made to the owner, who would think himſelf amply recompenced for his loſs by two tachals, about ſix ſhillings; and the beaſt being dead, there could be no ſin in eating it, but that a public ſanction could not previouſly be given to ſlaughter one. The Birmans ne- 121 Religious toleration. ver quarrel with a ſtranger on account of his religion. Their principal ſea-port, Rangoon, has long been the aſylum of inſolvent debtors from the different ſettlements of India. It is crowded with foreigners of deſperate fortunes, who find from the Birmans a friendly reception, and carry on a petty trade, which affords a decent ſubſiſtence to thoſe who act with prudence. Here are to be found fugitives from all countries of the eaſt, and of all complexions: Malabars, Moguls, Perſians, Parſees, Armenians, Portugueſe, French, and Engliſh, all mingle here, and are engaged in various branches of commerce. The members of this diſordant multitude are not only permitted to reſide under the protection of government, but likewiſe enjoy the moſt liberal toleration in matters of religion: They celebrate their ſeveral rites and feſtivals, totally diſregarded by the Birmans, who have no inclination to make proſelytes. In the ſame ſtreet may be heard the ſolemn voice of the muezzin, calling pious Iſlamites to early prayers, and the bell of the Portugueſe chapel tinkling a ſummons to Romiſh Chriſtians. Proceſſions meet and paſs each other without giving or receiving cauſe of offence. The Birmans never trouble themſelves about the religious opinions of any ſect, nor diſturb their ritual ceremonies, provided they do not break the peace, or meddle with their own divinity, Gaudma; but if any perſon commit an outrage, which the muſſulmans in their zeal for the true faith will ſometimes do, the offender is ſure to be put into the ſtocks; and if that does not calm his turbulent enthuſiaſm, they baſtinado him into tranquillity.

122 Rhahaans or prieſts. The rhahaans, or prieſts, are a kind of monks who live in cloiſters, profeſs celibacy, and abſtain from every ſenſual indulgence. The preſcribed puniſhment for a rhahaan detected in an act of incontinence, is

expulſion

Asia. expulsion and public disgrace. The delinquent is seated on an ass, and his face daubed with black paint, interspersed with spots of white. He is thus led through the streets, with a drum beating before him, and afterwards turned out of the city. The janizars only go abroad by the permission of the superior or prior of the convent. They are dressed in a long loose cloak, and yellow is the only colour worn by them. The rhahaans never dress their own victuals, holding it an abuse of time to perform any of the common functions of life, which, so long as they occupy, must divert them from the abstract contemplation of the divine essence. They receive the contributions of the laity ready cooked, and prefer cold food to hot. At the dawn of the morning they begin to perambulate the town, to collect supplies for the day: Each convent sends forth a certain number of its members, who walk at a quick pace through the streets, supporting with the right arm a blue lackered box, in which the donations are deposited; these usually consist of boiled rice mixed with oil, dried and pickled fish, sweetmeats, fruit, &c. During their walk they never cast their eyes to the right nor to the left, but keep them fixed on the ground; they do not stop to solicit, and seldom even look at the donors, who appear more desirous to bestow than the others to receive. The rhahaans eat but once a-day, at the hour of noon. A much larger quantity of provisions being commonly procured than suffices for the members of the convent, the surplus is disposed of as charitably as it was given, to the needy stranger, or the poor scholars who daily attend them to be instructed in letters, and taught their moral and religious duties.

123 Kioums, or monasteries.

In their choice of a residence, the rhahaans commonly select the most retired spots they can find, where shady trees, particularly the tamarind and banyan, protect them from the noonday sun. Their monasteries are different from common houses; they are made entirely of wood; the roof is composed of different stages supported by strong pillars; the inside comprehends one large hall; the whole house is open at the sides, and no private apartments are allowed: Publicity is the prevailing system of Birman conduct, and they admit of no secrets either in church or state. All kioums or monasteries, whether in town or country, are seminaries for the education of youth, in which boys of a certain age are taught their letters, and instructed in moral and religious duties. To these schools the neighbouring villagers send their children, where they are educated *gratis*, no distinction being made between the son of the peasant, and of him who wears the tsaloe or string of nobility. A piece of ground contiguous to the grove is enclosed for a garden, where they sow vegetables and plant fruit trees; the Indian sweet potato and the plantain, being the most nutritious, are principally cultivated. The charity of the country people supplies them abundantly with rice, and the few necessaries which their narrow wants require. Abstracted from all worldly considerations, they do not occupy themselves in the common concerns of life: they never buy, sell, or accept of money. Formerly there were nunneries of virgin priestesses, who, like the rhahaans, wore yellow garments, cut off their hair, and devoted themselves to charity and religion; but the Birman government has long since abolished these societies, and refuses to allow women, under pretence of sanctity, to be withdrawn from the performance of the important duty of contributing to support and increase the population of the state.

124

The Birmans are extremely magnificent in the structure of their temples: that of Shoemadoo, at the ancient city of Pegu, is most remarkable. We shall therefore give the description of it at full length:

125 Temple of Shoemadoo.

"The object in Pegu that most attracts and merits notice, is the noble edifice of Shoemadoo or the golden supreme. This extraordinary pile of building is erected on a double terrace, one raised upon another. The lower and greater terrace is about 16 feet above the natural level of the ground, forming an exact parallelogram: the upper and lesser terrace is similar in shape, and rises about 20 feet above the lower terrace, or 36 above the level of the country. I judged a side of the lower terrace to be 1391 feet; of the upper 684. The walls that sustained the sides of the terrace, both upper and lower, are in a ruinous state; they were formerly covered with plaster wrought into various figures. The area of the lower is strewed with the fragments of small decayed buildings; but the upper is kept free from filth, and is in tolerably good order. There is reason to conclude, that this building and the fortress are coeval, as the earth of which the terraces are composed, appears to have been taken from the ditch; there being no other excavation in the city, or in its neighbourhood, that could have afforded a tenth part of the quantity.

"The terraces are ascended by flights of stone steps, which are now broken and neglected. On each side are dwellings of the rhahaans raised on timbers four or five feet from the ground; these houses consist only of a large wall; the wooden pillars that support them are turned with neatness; the roofs are covered with tiles, and the sides are made of boards; and there are a number of bare benches in every house, on which the rhahaans sleep; but we saw no other furniture.

"Shoemadoo is a pyramidical building composed of brick and mortar, without excavation or aperture of any sort, octagonal at the base, and spiral at top; each side of the base measures 162 feet; this immense breadth diminishes abruptly, and a similar building has not unaptly been compared in shape to a large speaking trumpet.

"Six feet from the ground there is a wide projection that surrounds the base, on the plane of which are 57 small spires of equal size, and equidistant; one of them measured 27 feet in height, and 40 in circumference at the bottom. On a higher ledge there is another row, consisting of 53 spires of similar shape and measurement.

"A great variety of mouldings encircle the building, and ornaments somewhat resembling the fleur-de-lys surround the lower part of the spire; circular mouldings likewise girt it to a considerable height, above which there are ornaments in stucco not unlike the leaves of a Corinthian capital: And the whole is crowned by a tee or umbrella, of open iron-work, from which rises a rod with a gilded pennant.

"The tee or umbrella is to be seen on every sacred building that is of a spiral form; the raising and consecration of this last and indispensable appendage is an

Aſia. act of high religious ſolemnity, and a ſeaſon of feſtivity and relaxation. The preſent king beſtowed the tee that covers Shoemadoo. It was made at the capital; and many of the principal nobility came down from Ummerapoora to be preſent at the ceremony of its elevation.

"The circumference of the tee is 56 feet; it reſts on an iron axis fixed on the building, and is farther ſecured by large chains ſtrongly rivetted to the ſpire. Round the lower rim of the tee are appended a number of bells, which, agitated by the wind, make a continual jingling.

"The tee is gilt, and it is ſaid to be the intention of the king to gild the whole of the ſpire. All the leſſer pagodas are ornamented with proportionable umbrellas of ſimilar workmanſhip, which are likewiſe encircled by ſmall bells.

"The extreme height of the edifice, from the level of the country, is 361 feet, and above the interior terrace 331 feet.

"On the ſouth-eaſt angle of the upper terrace there are two handſome ſaloons or kioums lately erected, the roofs compoſed of different ſtages, ſupported by pillars; we judged the length of each to be about 60 feet, and the breadth 30; the ceiling of one is already embelliſhed with gold leaf, and the pillars are lackered; the decoration of the other is not yet completed. They are made entirely of wood; the carving on the outſide is laborious and minute; we ſaw ſeveral unfiniſhed figures of animals and men in groteſque attitudes, which were deſigned as ornaments for different parts of the building. Some images of Gaudma, the ſupreme object of Birman adoration, lay ſcattered around.

"At each angle of the interior and higher terrace there is a temple 67 feet high, reſembling in miniature the great temple; in front of that, in the ſouthern corner, are four gigantic repreſentations in maſonry of Palloo or the evil genius, half beaſt half human, ſeated on their hams, each with a large club on the right ſhoulder. The Pundoo who accompanied me, ſaid that they reſembled the Rahuſs of the Hindoos. Theſe are guardians of the temple.

Nearly in the centre of the eaſt face of the area are two human figures in ſtucco beneath a gilded umbrella; one ſtanding repreſents a man with a book before him, and a pen in his hand; he is called *Thaſiamee*, the recorder of mortal merits and mortal miſdeeds; the other, a female figure kneeling, is Maha Sumdera, the protectreſs of the univerſe, ſo long as the univerſe is doomed to laſt; but when the time of general diſſolution arrives, by her hand the world is to be overwhelmed and everlaſtingly deſtroyed.

"A ſmall brick building, near the north-eaſt angle, contains an upright marble ſlab, four feet high, and three feet wide: there is a long legible inſcription on it. I was told it was an account of the donations of pilgrims of only a recent date.

"Along the whole extent of the north face of the upper terrace there is a wooden ſhed, for the convenience of devotees who come from a diſtant part of the country. On the north ſide of the temple are three large bells of good workmanſhip, ſuſpended nigh the ground between pillars; ſeveral deers horns lie ſtrewed around; thoſe who come to pay their devotions firſt, take up one of the horns and ſtrike the bell three times, giving an alternate ſtroke to the ground: this act I was told is to announce to the ſpirit of Gaudma, the approach of a ſuppliant. There are ſeveral low benches near the foot of the temple on which the perſon who comes to pray places his offering, commonly conſiſting of boiled rice, a plate of ſweetmeats, or cocoa nut fried in oil; when it is given, the devotee cares not what becomes of it; the crows and wild dogs often devour it in preſence of the donor, who never attempts to diſturb the animals. I ſaw ſeveral plates of victuals diſpoſed of in this manner, and underſtood it to be the caſe with all that was brought. Aſia.

"There are many ſmall temples on the areas of both terraces, which are neglected and ſuffered to fall into decay. Numberleſs images of Gaudma lie indiſcriminately ſcattered. A pious Birman who purchaſes an idol, firſt procures the ceremony of conſecration to be performed by the rhahaans; he then takes his purchaſe to whatever ſacred building is moſt convenient, and there places it within the ſhelter of a kioum, or in the open ground before the temple; nor does he ever again ſeem to have any anxiety about its preſervation, but leaves the divinity to ſhift for itſelf. Some of thoſe idols are made of marble that is found in the neighbourhood of the capital of the Birman dominions, many are formed of wood and gilded, and a few are of ſilver. The latter, however, are not uſually expoſed and neglected like the others. Silver and gold are rarely uſed, except in the compoſition of houſehold gods.

"On both the terraces are a number of white cylindrical flags raiſed on bamboo poles; theſe flags are peculiar to the rhahaans, and are conſidered as emblematic of purity and of their ſacred functions. On the top of the ſtaff there is a henza or gooſe, the ſymbol both of the Birman and Pegu nations.

"From the upper projection that ſurrounds the baſe of Shoemadoo, the proſpect of the circumjacent country is extenſive and pictureſque; but it is a proſpect of nature in her rudeſt ſtate: there are few inhabitants, and ſcarcely any cultivation. The hills of Martaban riſe to the eaſtward, and the Sitang river, winding along the plains, gives an interrupted view of its waters. To the northward about 40 miles are the Galadzet hills, whence the Pegu river takes its riſe; hills remarkable only for the noiſome effects of their atmoſphere. In every other direction the eye looks over a boundleſs plain, chequered by a wild intermixture of wood and water."

The temple of Shoemadoo appears to be the largeſt in the Birman dominions. At the ſame time, they have many others formed upon a ſimilar plan and of great extent. Of one of theſe we ſhall take notice, on account of the coincidence between its name, and the name of a Pagan temple mentioned in the ſacred Scriptures. It is to be obſerved, that in the Birman tongue the word *ſhoe*, ſignifies *golden*; and the name of the temple to which we allude, is called *Shoedagon*, or *the temple of the golden Dagon*. It is thus deſcribed: "The temple of Shoedagon or Dagonng, about two miles and a half north of Rangoon, is a very grand building, although not ſo high by 25 or 30 feet as that of Shoemadoo at Pegu. It is much more ornamented; the terrace on which it ſtands is raiſed on a rocky eminence, conſiderably higher than the circumjacent

Aſia. jacent country. It is aſcended by above 100 ſtone ſteps that have been ſuffered to fall into decay. The ſituation renders Shoe Dagon a conſpicuous object at the diſtance of many miles. The tee and the whole of the ſpire are richly gilded, which, when the ſun ſhines, exhibit a ſingularly ſplendid appearance.

"The ſmall auxiliary buildings are yet more numerous than thoſe that ſurround the baſe of the Pegu temple. Perceiving that ſeveral of theſe were in a ruinous ſtate, whilſt the foundations of others were juſt laid, and ſome half finiſhed, I aſked, why they did not repair the damages of the old before they erected new ones, and was told, that to mend a decayed praw or temple, though an act of piety, was not ſo meritorious as to erect a new one; that ſometimes the old ones were repaired by thoſe who were unwilling or unable to be at the expence of a complete building; but this entirely depended on the means or inclination of the donor.

"The borders of the terrace on which the temple is raiſed are planted with ſhady trees in regular rows: From this eminence there is a beautiful and extenſive proſpect; the Pegu and Rangoon rivers are ſeen winding through a level woody country, and the temple of Syriam, little inferior to thoſe that have been deſcribed, ſtands near the junction of the ſtreams. The rainy monſoon had now ſet in, and inundations were formed in ſeveral places. It would have been a more pleaſing, though perhaps leſs picturesque ſcene, had the plains been cleared and the fields laid out for cultivation: we could obſerve few marks of improvement; woods, lakes, and rivers, preſented themſelves on every ſide."

126 Private buildings. But although the Birmans diſplay ſufficient magnificence in their temples and public buildings, their private houſes are conſtructed of very ſimple and cheap materials. Their king has even prohibited brick or ſtone to be uſed in the conſtruction of any private houſe, from an apprehenſion, it is ſaid, that if people were allowed to erect brick houſes, they might erect brick fortifications to the danger of the ſtate. It is not improbable, however, that the prohibition is owing to another cauſe. In the hot climates, where the ſoil is fertile, if the population happen to be defective, it is extremely difficult to prevent the whole country from being overrun with foreſts, which is at preſent in a great degree the caſe in the Birman dominions. One of the eaſieſt modes of ſubduing theſe foreſts, conſiſts of adopting the meaſure now mentioned, of prohibiting the uſe of brick or ſtone for private buildings. In other reſpects, however, the houſes are built with ſufficient attention to conveniency, and are all raiſed from the ground, either on wooden poſts or bamboos, according to the ſize of the building; ſo that the lower floor is above the ground. The monaſteries of the rhahaans, and the habitations of the higher ranks, are uſually elevated ſix or eight feet, and thoſe of the lower claſſes from two to four. The walls of the houſes are made of boards or mats, ſupported on bamboos or poſts. One inconvenience, however, attends them all, that from their being compoſed of ſuch combuſtible materials, the inhabitants are under continual dread of fire, againſt which they take every precaution. The roofs are lightly covered; and at every door ſtands a long bamboo with an iron hook at the end to pull down the thatch. There is alſo another pole with an iron grating at the extremity to ſuppreſs flame by preſſure. Almoſt every houſe has earthen pots filled with water, ſtanding ready on the roof; and a number of firemen patrole the ſtreets during the night to put out all fires and lights after a certain hour.

127 It is cuſtomary when the king, or when perſons of high rank travel, to erect temporary habitations for them, and this was done in honour of the Britiſh embaſſy. Theſe temporary houſes are thus deſcribed. "The materials of which theſe houſes are made, are always eaſy to be procured; and the ſtructure is ſo ſimple that a ſpacious and by no means an uncomfortable dwelling, ſuited to the climate, may be erected in one day. Our habitation, conſiſting of a ſmall room to each, and a hall, open to the north, in little more than four hours was in readineſs for our reception. Fifty or ſixty labourers completed it in that time; and, on emergency, could perform the work in much leſs. Bamboos, graſs for thatching, and the ground rattan are all the materials requiſite; not a nail is uſed in the whole edifice; a row of ſtrong bamboos from eight to ten feet high are fixed firm in the ground, which deſcribe the outline, and are the ſupports of the building; ſmaller bamboos are then tied horizontally by ſtrips of the ground rattan to theſe upright poſts; the walls compoſed of bamboo matts are faſtened to the ſides with ſimilar ligaments; bamboo rafters are quickly raiſed, and a roof formed, over which thatch is ſpread in regular layers, and bound to the roof by filaments of rattan; a floor of bamboo grating is next laid in the inſide, elevated two or three feet above the ground; this grating is ſupported on bamboos, and covered with mats and carpets: thus ends the proceſs, which is not more ſimple than effectual. When the workmen take pains, a houſe of this ſort is proof againſt very inclement weather. We experienced during our ſtay at Meeaday a ſevere ſtorm of wind and rain, but no water penetrated nor thatch eſcaped; and, if the tempeſt ſhould blow down the houſe, the inhabitants would run no riſk of having their brains knocked out or their bones broken; the fall of the whole fabric would not cruſh a lady's lap dog."

128 Adminiſtration of juſtice. In the adminiſtration of juſtice the Birmans are extremely regular and formal; the place where the judges of any diſtrict ſit is called the *rhoom*, where they hear the pleadings of parties or their counſel, and examine witneſſes, whoſe depoſitions are taken down in writing. Theſe depoſitions are ſent to the maywoon or viceroy, who repreſents the king, and the judges tranſmit their opinions along with the evidence, which the maywoon either confirms or rejects as he thinks proper; and, in caſes of capital conviction, orders execution or pardons the culprit. From his judgment there lies no appeal, unleſs the offender hold a royal commiſſion; in which caſe the evidence muſt be tranſmitted to the council of ſtate, and the king himſelf applies the law and pronounces judgment.

129 The rhoom. The building denominated the *rhoom* is alſo the official hall where the members of provincial governments and all municipal officers are accuſtomed to aſſemble to tranſact public buſineſs. Every man of high rank in the Birman empire is a magiſtrate, and has a place of this deſcription and name contiguous to his dwelling; but

Aſia. but always on the outſide of the encloſure of his court yard, and not ſurrounded by any fence or railing, in order to manifeſt publicity, and ſhow that it is the ſeat of majeſty and juſtice, to which all mankind may have free acceſs. An imperial mandate to a governor, or an order from a governor to a petty miongee or chief of a ſmall town or diſtrict, is invariably opened and read aloud in this ſanctified hall. The Birman government, in the adminiſtration of public affairs, profeſſes no ſuch thing as privacy or concealment. The rhoom is likewiſe an appendage of dignity, as it denotes him to whoſe habitation it is annexed to be a perſon of rank and conſequence; a building of this ſort was erected within a few yards of the front gate of the Britiſh ambaſſador's encloſure. It is to be remarked, that when the ambaſſador had obtained from the government the eſtabliſhment of certain regulations reſpecting commerce, and had returned to the ſea port of Rangoon, the viceroy of that diſtrict informed him that the orders for carrying into effect the late regulations would be publicly read and regiſtered at the rhoom on the following day. The viceroy alſo invited him to ſend a confidential perſon to be preſent at the ceremony; adding, that the records were alſo open to the public inſpection; and that whoever choſe might, at any time, procure a copy, by paying a trifling fee to the officers of the court. The reſult of this publicity is, that foreigners, acquainted with the character of the people, do not heſitate to truſt themſelves in the very centre of the country. At the diſtance of 150 miles from the coaſt, including the windings of the river, our embaſſy found a muſſulman merchant from Surat, out of economy, building a veſſel of four hundred tons burden, inſtead of building it at the ſea port of Rangoon. He meant, as ſoon as the hull ſhould be finiſhed, to float it down the ſtream. The inland navigation is conſidered as dangerous; but this merchant choſe to encounter the riſk for the ſake of obtaining the teek timber at a cheap rate near the ſpot where it grows, and probably alſo for the ſake of obtaining labour at a more moderate price. This adventurer furniſhes a proof of the confidence that may be placed in the Birman government, and the ſecurity that a ſtranger has for his property.

130 Military force.

The Birman government is of a feudal nature in the ſtricteſt ſenſe of the word. The people are a nation of ſoldiers; every man in the kingdom being liable to be called upon military ſervice, and war is deemed the moſt honourable occupation. The regular military eſtabliſhment of the nation, however, as among our anceſtors in feudal times, is very inconſiderable, conſiſting only of the royal guards, and as many troops as are neceſſary to preſerve the police of the capital. Theſe are ſuppoſed to amount, in all, to about 2000 infantry, and 300 cavalry, though it is ſaid that the cavalry ſcattered in ſmall detachments through the diſtricts adjoining to the capital, amount to about 2000. The infantry are armed with muſkets and ſabres, and are not uniformly clothed; the cavalry in the king's ſervice, are natives of the northern province of Caſſay, who are accounted much better horſemen than the Birmans; they ſeldom uſe any other weapon than a ſpear about ſeven or eight feet long. They ride like all orientals with ſhort ſtirrups, and a looſe rein; their dreſs is not unbecoming; it conſiſts of a tight coat, with ſkirts reaching down to the middle of the thigh, and on their head they wear a turban of cloth rolled hard and plaited, which forms a high cone, that bends backwards in a graceful manner; their horſes are ſmall, but hardy and active, and are frequently exported to the weſtern peninſula. When an army is to be raiſed, a mandate iſſues to all the viceroys of provinces and governors of diſtricts, requiring a certain number of men to be at a general rendezvous on an appointed day; the levy is proportioned to the population of the province or diſtrict, eſtimated from the number of regiſtered houſes that it contains; the provincial court determines the burden which each houſe is to bear; a certain number of houſes furniſh a recruit among them, or pay 300 tackal in money, about 40l. or 45l.: The recruit is ſupplied with arms, ammunition, and, it is believed, with a daily allowance of grain from the government; but he receives no pay. The families of theſe conſcripts are carefully retained in their diſtricts as hoſtages for the good conduct of their relation. In caſe of deſertion or treachery, the innocent wife, children, and parent of the guilty perſon are dragged to execution without pity; even cowardice ſubjects the family of the delinquent to capital puniſhment, and this barbarous law is rigorouſly inforced. Aſia.

131 War-boat.

By far the moſt reſpectable part of the Birman military force is their eſtabliſhment of war boats; every town of note in the vicinity of the principal rivers is obliged to furniſh a certain number of men, and one or more boats, in proportion to the magnitude of the place: thus the king can command at a very ſhort notice 500 of theſe veſſels: They are conſtructed out of the ſolid trunk of the teek-tree, which is excavated partly by fire and partly by cutting; the largeſt are from 80 to 100 feet long, but the breadth ſeldom exceeds eight feet, and even this ſpace is produced by artificially extending the ſides after the trunk has been hollowed: They carry from 50 to 60 rowers, who uſe ſhort oars, that work on a ſpindle. The prow is ſolid, and is a flat ſurface on which, when they go to war, a piece of ordnance is mounted; a ſix, a nine, or even a twelve pounder. The gun-carriage is ſecured by laſhings to ſtrong bolts on each ſide, and ſwivels are frequently fixed on the curvature of the ſtern. Each rower is provided with a ſword and a lance, which are placed by his ſide while he plies the oars. Beſides the boatmen, there are uſually 30 ſoldiers on board, who are armed with muſkets: thus prepared, they go in fleets to meet the foe, and when in ſight, draw up in a line, preſenting their prows to the enemy. Their attack is extremely impetuous; they advance with great rapidity, and ſing a war ſong, at once to encourage their people, daunt their adverſaries, and regulate the ſtrokes of their oars; they generally endeavour to grapple, and when that is effected, the action becomes very ſevere, as theſe people are endowed with great courage, ſtrength, and activity. In times of peace they are fond of exerciſing in their boats, and they diſplay much dexterity in the management of them. The veſſels being low in the water, their greateſt danger is that of being run down by a larger boat ſtriking on their broadſide, a misfortune which the ſteerſman is taught to dread and to avoid above all others. It is ſurpriſing, ſays our author, to ſee the facility.

Asia. cility with which they ſteer and elude each other in their mock combats. The rowers are alſo practiſed to row backwards, and impel the veſſel with the ſtern foremoſt; this is the mode of retreat, by means of which the artillery ſtill bears upon their opponent. The largeſt of the war boats do not draw more than three feet water.

132 Revenue. The revenue of the Birman king is, according to the laws of their religion, as ſtated in their ſacred books, a tenth of all produce, and it is certain that one-tenth is the amount of the king's duty on all foreign goods imported into his dominions. The revenue ariſing from the cuſtoms on imports, and from internal produce, is moſtly taken in kind; a ſmall part of which is converted into caſh: the reſt is diſtributed as received in lieu of ſalaries to the various dependants of the court. Princes of the blood, high officers of ſtate, and provincial governors, receive grants of provinces, cities, villages, and farms, to ſupport their dignity, and as a remuneration of their ſervices; the rents of theſe aſſignments they collect for their own benefit. Money, except on preſſing emergency, is never diſburſed from the royal coffers: to one man the fees of an office are allotted; to another a ſtation where certain impoſts are collected; a third has land; each in proportion to the importance of his reſpective employment. By theſe donations they are not only bound in their own perſonal ſervitude, but likewiſe in that of all their dependants; they are called ſlaves of the king, and in turn their ſlaves are denominated ſlaves to them: the conditions of theſe grants include alſo ſervices of war as well as the duties of office. Thus the Birman governments exhibits almoſt a faithful picture of Europe in the darker ages, when, on the decline of the Roman empire, the principles of feudal dependance were eſtabliſhed by barbarians from the north.

133 The government feudal. This ſyſtem of feudal dependance may be conſidered as exiſting in the Birman government in its pureſt ſtate. There are no hereditary dignities or employments; all honours and offices on the demiſe of the poſſeſſor revert to the crown, a circumſtance which when taken along with the obligation to military ſervice, which is incumbent upon all down to the loweſt of the people, gives to this government that appearance of a military encampment and ſubordination which the feudal tenures have been underſtood to exhibit, but from which they degenerated in Europe, when dignities and authority became hereditary. In conſequence of the feudal principles which here prevail, the ſubordination of rank is maintained and marked by the Birmans with the moſt tenacious ſtrictneſs. In the manner of conſtructing houſes, whether temporary or laſting, ſtrict attention is paid to the form which indicates the rank of the inhabitant; nor dare any ſubject aſſume a mode of ſtructure to which he is not legally entitled: the diſtinction conſiſts chiefly of the number of ſtages of which the roof is compoſed; even domeſtic implements, ſuch as the betel-box, water-flagon, drinking-cup, and horſe-furniture, all expreſs by their ſhape and quality the preciſe ſtation of the owner; nor can one perſon intrude upon the rights of another under penalty of incurring a moſt ſevere puniſhment, which is never remitted. The tſalſe, or chain, is the badge of the order of nobility, of which there are different degrees, diſtinguiſhed by the number of ſtrings or ſmall chains that compoſe the ornament. Theſe ſtrings are joined by boſſes where they unite: three of open chain-work is the loweſt rank; three of neatly twiſted wire is the next; then of ſix, of nine, and of twelve; no ſubject is ever honoured with a higher degree than twelve; the king alone wears 24.

134 Ranks in ſociety. As gold is underſtood to be the nobleſt of metals, the king of the Birmans, who is the foundation of rank, is deſignated or deſcribed by the appellation of *thoe* or *golden*; thus, a particular village inhabited by watermen in the ſervice of the king is called *Shwe-lee-rua*, or *golden boat village*, nor is the perſon of the ſovereign ever ſpoken of but in conjunction with this precious metal. When a ſubject means to affirm that the king has heard any thing, he ſays, "It has reached the golden ears;" he who has obtained admiſſion to the royal preſence, has been at the golden feet; the perfume of ottar of roſes, a nobleman obſerved one day, "was an odour grateful to the golden noſe." Gold among the Birmans being a type of excellence, is not merely aſcribed to their king, but on ſolemn occaſions it is placed on his dreſs in ſuch quantities as to prove not a little cumberſome. The form in which the ambaſſadors were introduced to his majeſty, and the appearance which he made are thus deſcribed: "On entering the gate, we perceived the royal ſaloon of ceremony in front of us, and the court aſſembled in all the parade of pomp and decoration. It was an open hall, ſupported by colonnades of pillars, 20 in length and only four in depth; we were conducted into it by a flight of ſteps, and advancing, took our places next the ſpace oppoſite to the throne, which is always left vacant as being in full view of his majeſty. On our entrance, the baſement of the throne was alone viſible, which we judged to be about five feet high; folding doors ſcreened the ſeat from our view: the throne, called *yazapalay*, was richly gilded and carved; on each ſide a ſmall gallery encloſed by a gilt baluſtrade extended a few feet to the right and left, containing four umbrellas of ſtate; and on two tables at the foot of the throne were placed ſeveral large veſſels of gold, of various forms, and for different purpoſes; immediately over the throne a ſplendid piaſath or pyramid roſe in ſeven ſtages above the roofs of the building, crowned by a tee or umbrella, from which a ſpiral rod was elevated above the whole.

135 Introduction of ambaſſadors to the Birman king.

"We had been ſeated little more than a quarter of an hour, when the folding-doors that concealed the ſeat opened with a loud noiſe, and diſcovered his majeſty aſcending a flight of ſteps that led up to the throne from the inner apartment; he advanced but ſlowly, and ſeemed not to poſſeſs a free uſe of his limbs, being obliged to ſupport himſelf with his hands on the baluſtrade. I was informed, however, that this appearance of weakneſs did not proceed from any bodily infirmity, but from the weight of the regal habiliments in which he was clad; and if what we were told was true, that he carried on his dreſs 15 viſs, upwards of 50 pounds avoirdupois of gold, his difficulty of aſcent was not ſurpriſing. On reaching the top, he ſtood for a minute, as though to take breath, and then ſat down on an embroidered cuſhion, with his legs inverted. His crown was a high conical cap, richly ſtudded with precious ſtones; his fingers were covered with rings, and in his dreſs he bore the appearance of

Aſia.

a man caſed in golden armour, whilſt a gilded or probably a golden wing on each ſhoulder did not add much lightneſs to his figure. His looks denoted him to be between 50 and 60 years old, of a ſtrong make, in ſtature rather beneath the middle height, with hard features, and of a dark complexion; yet the expreſſion of his countenance was not unpleaſing, and ſeemed, I thought, to indicate an intelligent and inquiring mind.

"On the firſt appearance of his majeſty, all the courtiers bent their bodies, and held their hands joined in an attitude of ſupplication. Nothing farther was required of us than to lean a little forward, and to turn in our legs as much as we could; not any act being ſo unpolite or contrary to etiquette as to preſent the ſoles of the feet towards the face of a dignified perſon. Four Bramins, dreſſed in white caps, and gowns, chanted the uſual prayer at the foot of the throne: a nakhaan then advanced into the vacant ſpace before the king, and recited in a muſical cadence the name of each perſon who was to be introduced on that day, and of whoſe preſent, in the character of a ſuppliant, he entreated his majeſty's acceptance. My offering conſiſted of two pieces of Benares gold brocade; Doctor Buchanan and Mr Wood, each preſented one. When our names were mentioned, we were ſeparately deſired to take a few grains of rice in our hands, and, joining them, to bow to the king as low as we conveniently could; with which we immediately complied. When this ceremony was finiſhed the king uttered a few indiſtinct words, to convey, as I was informed, an order for inveſting ſome perſons preſent with the inſignia of a certain degree of nobility; the imperial mandate was inſtantly proclaimed aloud by heralds in the court. His majeſty remained only a few minutes longer, and during that time looked at us attentively, but did not honour us with any verbal notice, or ſpeak at all, except to give the order before mentioned. When he roſe to depart, he manifeſted the ſame ſigns of infirmity as on his entrance; after he had withdrawn, the folding doors were cloſed, and the court broke up."

It may here be added, that among the Birmans the royal family is held of ſo much importance, that to ſucceed to the throne, every prince muſt be deſcended from royal parentage by both father and mother; for this reaſon inceſtuous marriages are permitted to their princes, but to nobody elſe; the king may indeed marry a ſecond wife of inferior rank while his firſt is alive, but ſhe is accounted merely a concubine, and her children are illegitimate, and cannot inherit the throne.

136 Literature.

The books of the Birmans are generally formed of the palmetto leaf, on which the letters are engraved with a ſtylus. Books are ſometimes compoſed, however, of thin ſtripes of bamboo delicately plaited and varniſhed over in ſuch a manner as to form a ſmooth hard ſurface upon a leaf of any dimenſion. This ſurface is afterwards gilded, and the letters traced upon it in black and ſhining japan. The margin is illumined by wreaths and figures of gold. The Birmans write from left to right, and though they leave no diſtinguiſhing ſpace between their words, they mark the pauſes of a ſentence and the full ſtops. Their letters are diſtinct, and their manuſcripts are in general very beautiful. Their language contains 33 ſimple ſounds, and their alphabet conſiſts of an equal number of diſtinct characters, excluſive of various marks and contractions, which are explained in their ſpelling-book. Their common characters conſiſt of circles, and ſegments of circles, variouſly diſpoſed and combined. The Birmans are extremely fond both of poetry and muſic: their poetry, when repeated by a well educated perſon, is exceedingly melodious; it is ſometimes in ſucceſſive, and ſometimes in alternate rhymes: they have epic as well as religious poems of high celebrity, and they are fond of reciting in heroic numbers, the exploits of their kings and generals. It is ſaid, that the proweſs of the great Alompra, the deliverer of his country, is recorded in verſes not unworthy of his courage and his fortune. The members of the Britiſh embaſſy were invited by the maywoon or viceroy of Pegu to one of their dramatic repreſentations, which they applaud not a little. "The theatre was the open court, ſplendidly illuminated by lamps and torches; the maywoon and his lady ſat in a projecting balcony of his houſe; we occupied ſeats below him, raiſed about two feet from the ground, and covered with carpets; a crowd of ſpectators were ſeated in a circle round the ſtage. The performance began immediately on our arrival, and far excelled any Indian drama that I had ever ſeen. The dialogue was ſpirited without rant, and the action animated without being extravagant; the dreſſes of the principal performers were ſhowy and becoming. I was told that the beſt actors were natives of Siam, a nation, which though unable to contend with the Birmans and Peguers in war, have cultivated with more ſucceſs the refined arts of peace. By way of interlude between the acts, a clowniſh buffoon entertained the audience with a recital of different paſſages; and by grimace and frequent alterations of tone and countenance, extorted loud peals of laughter from the ſpectators. The Birmans ſeem to delight in mimickry, and are very expert in the practice, poſſeſſing uncommon verſatility of countenance. An eminent practitioner of this art, amuſed us with a ſpecimen of his ſkill, at our own houſe, and to our no ſmall aſtoniſhment, exhibited a maſterly diſplay of the paſſions in pantomimic looks and geſtures; the tranſitions he made from pain to pleaſure, from joy to deſpair, from rage to mildneſs, from laughter to tears; his expreſſion of terror, and above all, his look of idiotiſm, were performances of firſt rate merit in their line; and we agreed in opinion, that had his fates decreed him to have been a native of Great Britain, his genius would have rivalled that of any modern comedian of the Engliſh ſtage.

137 Poetry.

"The plot of the drama performed this evening, I underſtood, was taken from the ſacred text of the Ramayen of Balmiec (called by Sir William Jones, *Valmiec*) a work of high authority among the Hindoos. It repreſented the battles of the holy Ram, and the impious Rahwaan, chief of the Rakuſs or demons, to revenge the rape of Secta, the wife of Ram, who was forcibly carried away by Rahwaan, and bound under the ſpells of enchantment. Viciſſitudes of fortune took place during the performance that ſeemed highly intereſting to the audience. Ram was at length wounded by a poiſoned arrow; the ſages ſkilled in medicine conſulted on his cure; they diſcovered, that on the mountain Indragurry grew a certain tree that produced a gum,

Aſia. gum, which was a foreign antidote against the deleterious effects of poiſon; but the diſtance was ſo great that none could be found to undertake the journey; at length Honymaw, leader of the army of apes, offered to go in queſt of it. When he arrived at the place, being uncertain which was the tree, he took up half the mountain and tranſported it with eaſe: thus was the cure of Ram happily effected, the enchantment was broken, and the piece ended with a dance and ſongs of triumph."

When at the capital, Ummerapoora, our author deſcribes his viſit to the royal library in the following terms: Having finiſhed our introductory viſits to the different members of the royal family, we had now leiſure to gratify our curioſity by viewing whatever the capital contained that was moſt deſerving the notice of ſtrangers. The day not being far advanced, we walked from the palace of Pagahm to ſee the pedigaut tick or royal library: it is ſituated at the north-weſt angle of the fort, in the centre of a court paved with broad flags, and cloſe to a very handſome kioum or monaſtery. Before we entered the library we aſcended the kioum, and found the inſide correſpond with the external appearance; the building was ſpacious and richly gilded; the pillars, the ceiling, and the pannels, were entirely covered with gold leaf; and the image of Gaudma ſhone with a brilliant luſtre; a baluſtrade of wood, minutely and beautifully carved, protected the image from intruders. On the pannels of the walls were repreſented figures of inferior agents of the divinity, and of proſtrate rhahaans in the act of devotion; theſe were all ſhaped in fret-work in the wood, and were of no contemptible workmanſhip; a well wrought foliage of the ſame bordered the pannels. The image of Gaudma in this kioum, was large, and made of marble; it was ſeated on a broad pedeſtal entirely gilded; in front of which, within the baluſtrade, ſtood a handſome girandole of cut glaſs of European manufacture: near the image was a gilded couch, which we were informed was the cuſtomary bed of the principal rhahaan, or head of all the Birman prieſthood, when he choſe to paſs the night in the fort, which rarely happened. It was ſplendidly gilt; the bottom, however, was only a bare board; pillars were not wanting, for there were two, but they were made of wood. A mat ſpread on the floor is the higheſt luxury of repoſe in which the rhahaans indulge.

"From the kioum we proceeded to viſit the adjacent library; it is a large brick building raiſed on a terrace, and covered by a roof of a very compound ſtructure. It conſiſts of one ſquare room, with an encloſed veranda, or gallery, ſurrounding it: this room was locked, and as we had not brought a ſpecial order for ſeeing it, the perſon who had the care of the library ſaid, that he was not at liberty to open the doors, but aſſured us, that there was nothing in the inſide different from what we might ſee in the veranda, where a number of large cheſts, curiouſly ornamented with gilding and Japan were ranged in regular order againſt the wall; I counted 50, but there were many more, probably not leſs than 100. The books were regularly claſſed, and the contents of each cheſt were written in gold letters on the lid. The librarian opened two, and ſhewed me ſome very beautiful writing on thin leaves of ivory, the margins of which were ornamented with flowers of gold neatly executed. I saw also some books written in the ancient Pali, the religious text. Every thing seemed to be arranged with perfect regularity, and I was informed, that [illegible] books were divided into; many on divinity, [illegible] other; [illegible], music, medicine, painting, and romance, had [illegible] separate treatises. The volumes were [illegible] under distinct heads, regularly numbered; and [illegible] the [illegible] encircled were as well [illegible] as those [illegible] to our inſpection, it is not improbable that his Birman majeſty may poſſeſs a more numerous library than any potentate from the banks of the Danube to the confines of China."

Books were afterwards brought for ſale to the gentlemen of the embaſſy, but always clandeſtinely; and an exorbitant price was demanded, under pretence that if any perſon were diſcovered to have ſold books to a foreigner without permiſſion, he would be liable to a ſevere penalty. A man was actually impriſoned for an offence of this nature, upon which Captain Symes ſent a meſſage to the chief woongee or prime miniſter, appriſing him of the circumſtance, and deſiring to know whether it was illegal to ſell books to himſelf or his ſuite; adding, that if their law prohibited it, he would reject ſuch as in future might be brought, and direct every perſon under his authority to do the ſame. The woongee returned a civil meſſage, and the man was ſet at liberty. His majeſty being made acquainted with the affair, ſummoned on the following day, the principal rhahaans to attend his council, and ſubmitted to them, whether or not it was conſiſtent with Birman tenets, to grant books that treated of their hiſtory and laws to foreigners? The conclave, after ſolemn deliberation, determined in the affirmative, and added, that it was not only admiſſible but laudable, for the diſſemination of knowledge. His majeſty was thereupon pleaſed to order a handſome copy of the Razawayn, or hiſtory of their kings, and of the Dhermaſath, or code of laws, to be delivered to Captain Symes from the royal library; each was contained in one large volume, written in a beautiful manner, and handſomely adorned with painting and gilding.

Muſic. Muſic is a ſcience that is held in no ſmall degree of eſtimation throughout the Birman empire, and is very generally cultivated; there is ſcarcely even a boatman who does not poſſeſs an inſtrument of ſome ſort; they who can procure no better have at leaſt what is called a *Jew's-harp*, with which they delight to beguile half an hour of a cool evening after a day ſpent in ſevere labour under a burning ſun. Some of the profeſſional muſicians diſplay conſiderable ſkill and execution; and the ſofter airs are pleaſing even to an ear unaccuſtomed to the melodies of the country. The principal inſtruments are a ſoum or harp, made of light wood hollowed and varniſhed, in ſhape ſomewhat reſembling a canoe with a deck; at the extremity, a piece of hard wood is neatly faſtened, which tapers to the end, and riſing curves over the body of the harp; from this curvature the ſtrings, uſually made of wire, are extended to a bridge on the belly of the inſtrument; there are two ſounding holes, one on each ſide of the bridge. The ſize of the ſoum varies from two to five feet in length. The turr reſembles our violin. It has only three ſtrings, and is played on with a bow. The pullawaz is a common flageolet. The kyezoup is a collection [illegible]

Asia. about 18 cymbals, ſuſpended in a bamboo frame; theſe cymbals, varying in ſize, produce modulated gradations of ſounds. The patola, or guitar of the Birmans, is ſaid to be a curious inſtrument: it is the exact form, in miniature, of a crocodile; the body of which is hollow, with ſounding holes in the back; three ſtrings of wire extend from the ſhoulder to the tail, to which they are faſtened. It is played on by the fingers, and is generally uſed to accompany the voice. The bondaw is a collection of drums, oblong in form, and varying in ſize, which are ſuſpended perpendicularly in a wooden frame by leather thongs. The whole machine is about five feet in diameter, and four feet high. The performer ſtands in the centre, and beats on the drums with a ſmall ſtick. This inſtrument is always introduced when there is a full band, and is much uſed in proceſſions, of which the Birmans are very fond, being carried by two men, while the performer ſhuffles along in the inſide, playing as he goes. The heem is the pipe of Pan, formed of reeds neatly joined together, and ſounded by a common mouth-piece. It produces a very plaintive melody.

139 Time. The Birmans divide their year into 12 months, which, ſtrictly ſpeaking, cannot be called *ſynodical*, although they comprehend the ſame number of days. A revolution of the moon, in paſſing from one conjunction with the ſun to another, is performed in 29 days 12 hours and 44 minutes; but the Birman lunations conſiſt of 29 and 30 days alternately, which cauſes a difference between the Newtonian and Birman lunar account of 8 hours and 48 minutes. The Birman months are as follows:

	Days.
Tagoo contains	29
Kayoung	30
Nay Young	29
Waſoo	30
Wagoung	29
Toozalien	30
Tandaing Guite	29
Tazoung Moang	30
Gnadoh	29
Peezoo	30
Taboodiray	29
Taboung	30
	354

In order to complete a ſolar revolution, they intercalate in every third year a month of 30 days, which is called *Toodea Wazoo*; in this third year the months of Tagoo and Nay Young have each 30 days inſtead of 29; they likewiſe ſuppreſs or paſs over a day, which, if reckoned, would either be the 31ſt Taboung, or the 1ſt of Tagoo; by theſe means the number of days in three ſolar years is thus computed:

	Days.
Three lunar years of 354 days each,	1062
Intercalary month in the third year,	30
Two intercalary days in Tagoo and Nay Young,	2
Suppreſſed or paſſed over at the end of the year,	1
	1095

This computation correſponds in the number of days with three years; every fourth year, however, will occaſion the difference of a day on account of our biſſextile, or leap year; of this the Birmans are fully ſenſible, as well as of many other defects in their manner of reckoning; to remedy the confuſion likely to enſue from ſuch erroneous calculations, their ſtyle or mode has frequently been altered by arbitrary authority. Aſia.

The manner in which the Birman month is ſubdivided is ſomewhat peculiar; inſtead of reckoning the days progreſſively from the commencement to the cloſe of the month, they divide it into two parts, and number the days of the increaſing and of the waning moon ſeparately. Each moon or month is alſo divided into weeks of ſeven days each, and Sunday, as with us, is the firſt day of the Birman week. The eighth day of the increaſing moon, the fifteenth or full moon, and the eighth of the decreaſing moon, are obſerved as ſacred feſtivals. On theſe holidays no buſineſs is tranſacted in the rhoom; mercantile dealings are ſuſpended; handicraft occupations are forbidden, and the ſtrictly pious take no ſuſtenance between the riſing and the ſetting ſun. This laſt inſtance of ſelf-denial, however, is uncommon, except in the metropolis, where it is ſubmitted to by ambitious perſons with a view to obtain favour with the king, who is underſtood to be a great favourer of the auſterities of the Birman religion. Minute portions of time are divided as follows: "The ſpace in which the finger can be raiſed and depreſſed is called *charazi*; ten charazi make one piaan; ſix piaan one bezana, about a minute. The day, of 24 hours commencing at noon, is divided into eight portions or yettee, of three hours each. Theſe diviſions of time are aſcertained by a machine reſembling the hour-glaſs, and ſometimes by a perforated pan placed in a tub of water; they are announced by a ſtroke on an oblong drum, which is always kept near the dwelling of the chief magiſtrate of the city, town, or village; it is commonly raiſed on a high bamboo ſtage, with a roof of mats to protect it from the weather.

The edifice at the royal palace for the reception of this inſtrument is of maſonry, and very lofty, whence the ſound is ſaid to be diſtinctly conveyed to the remoteſt quarters of the city.

140 Money. The Birmans, like the Chineſe, have no coin. Silver in bullion, and lead, are the current monies of the country; weight and purity are of courſe the ſtandard of value, and in the aſcertainment of both the natives are exceedingly ſcrupulous and expert. What foreigners call a *tackal*, properly *kiat*, is the moſt general piece of ſilver in circulation; it weighs 10dwts 10$\frac{1}{16}$gr.; its ſubdiviſions are, the tubbee, two of which make one moo; two moo, one math; four math, one tackal; and one hundred tackal compoſe one viſs. Money ſcales and weights are all fabricated at the capital, where they are ſtamped, and afterwards circulated throughout the empire; the uſe of any other is prohibited. The bankers, called by foreigners *pynions*, are likewiſe workers in ſilver and aſſayers of metal. This is a claſs of people very numerous, and indiſpenſably neceſſary, as no ſtranger can undertake either to pay or receive money without having it firſt examined. Every merchant has a banker of this deſcription, with whom he lodges all his cath, and who, for receiving and paying, gets an eſtabliſhed commiſſion of one per cent; in conſideration of which he is reſponſible for the quality

of

Aſia. of what goes through his hands; and in no inſtance has it been known that a breach of truſt was committed by one of theſe bankers. The quantity of alloy varies in the ſilver current in different parts of the empire; at Rangoon it is adulterated twenty-five per *cent*; at Ummerapoora, fine, or what is called *flowered ſilver*, is moſt common; in this latter all royal dues are paid. Any perſon may have his ſilver either purified or depreciated to whatever ſtandard he chooſes; the neareſt ſilverſmith will be glad to perform the work, free from charge for his labour, as the bringer, by the operation, muſt loſe a trifle, which the artiſt gains; the ſmall quantity of metal that adheres to the crucible is his profit.

141 Meaſures. The Birman meaſures of length are a paul-gaut or inch, 18 of which compoſe the jaim or cubit; the ſaundgaling or royal cubit, equal to 22 inches; the dha or bamboo, which conſiſts of 7 royal cubits; 1000 dha make one Birman league or dain, nearly equal to two Britiſh miles and two furlongs; the league is alſo ſubdivided into tenths. The Birmans keep their accounts in decimals, after the manner of the Chineſe.

142 Arts. Agriculture. The Birmans have hitherto carried few of the arts to very great perfection. The art of agriculture, which is the foundation of all others, ſeems in a very imperfect ſtate; this, however, does not appear to riſe ſo much from want of ſkill in the people as from their preſent ſituation, which renders great exertions to procure ſubſiſtence by no means neceſſary. The ſoil is extremely fertile, while the population is very ſcanty; the Birmans, therefore, are ſomewhat in the ſtate of coloniſts upon a new territory; land is abundant and cheap, while labour is obtained with difficulty; hence they cultivate only the moſt fertile ſpots, and theſe in an indifferent manner, leaving the greater part of the work to nature, which has been very bountiful to them. They are not, however, altogether unacquainted with ſome uſeful practices; they everywhere burn the rank graſs, once a year, to improve the paſture. In ſome quarters of the country neat farms are to be ſeen, with lands well fenced and divided into encloſures to receive the cattle, of which there are great abundance; the fields are divided by thorn hedges; the low grounds are prepared for rice, and the higher lands are planted with leguminous ſhrubs, or left for paſture.

143 Ship-building. The Birmans are at preſent endeavouring with great ſpirit to improve their marine architecture. Formerly, they uſed only ſmall veſſels, no better than a kind of boats; but, having obtained farther information from their communication with Europeans, they are now launching veſſels of conſiderable magnitude. When the Britiſh embaſſy were at Rangoon, they ſaw ſeveral ſhips upon the ſtocks from 600 to 1000 tons burden; one belonging to the maywoon of Pegu, about 900 tons, was conſidered, by profeſſional men, as a ſpecimen of excellent workmanſhip; it was entirely formed by Birman carpenters upon a French model, as are moſt of their large veſſels; the Birmans having received their firſt rudiments of the art from that nation: three or four veſſels of burden were likewiſe in a ſtate of forwardneſs belonging to Engliſh adventurers. Birman ſhipwrights appear to finiſh their work well; they are athletic men, and poſſeſs, in an eminent degree, that vigour which diſtinguiſhes Europeans, and gives them pre-eminence over the enervated natives of Hindooſtan.

Aſia.

144 Cloths.

Upon the ſea coaſt they manufacture great quantities of ſalt, from which the government derives a conſiderable revenue. Cloths of different kinds are manufactured by the women in all parts of the empire, and even in the royal palace they carry on domeſtic manufactures. On a viſit to the mother of the queen, the ambaſſador ſaw, in one of the galleries of her palace, three or four looms at work. At Pegu the women weave for their own and their huſbands uſe ſilk and cotton cloth: the thread is well ſpun; the texture of the web is cloſe and ſtrong, and is moſtly chequered like Scotch tartan. At a town in the interior called *Pakang-yag*, ſituated on the river Irrawaddy, large quantities of ſilken cloth, and of ſilk and cotton mixed, are manufactured. The ſilk of which theſe goods are made comes from Yunan, the ſouth-weſt province of China, in a raw ſtate; the colours are bright and beautiful; the texture is cloſe, and the cloth is ſaid to wear much longer than any Chineſe or Indian manufacture. At a town called *Summei kioum* is the greateſt manufactory of ſaltpetre and gunpowder in the kingdom. From a prejudice, not unuſual in the infancy of commerce, neither ſaltpetre nor gunpowder is ſuffered to be exported upon any plea. At the ſuburbs of a town called *Pagahm*, the members of the embaſſy found the inhabitants employed in preſſing oil from the ſeſamum ſeed; the grain is put into a deep wooden trough, in which it is preſſed by an upright timber fixed in a frame; the force is increaſed by a long lever, on the extremity of which a man ſits and guides a bullock that moves in a circle, thus turning and preſſing the ſeed at the ſame time; the machine was ſimple, and anſwered the purpoſe effectually. There were not leſs than 200 of thoſe mills within a narrow compaſs. From the circumſtance of the cattle being in good order, we concluded, that they were fed on the ſeed after the oil was extracted. The land about Pagahm ſcarcely yields ſufficient vegetation to nouriſh goats.

146 Saltpetre and gunpowder.

147 Oil mills.

148 Glaſs. Our readers will readily believe, that *we* peruſed with much pleaſure the following paſſage in Captain Symes's Account of his Embaſſy: "Among the articles of foreign trade which had found their way into the Birman country, nothing was held in higher eſtimation than the European glaſsware, imported into Rangoon from the Britiſh ſettlements in India. The art of vitrification has long been known and practiſed in moſt countries of the eaſt; but nowhere can they make a pure tranſparent ſubſtance, like that which is brought from Europe. The Birman monarch, who is a great admirer of the manufacture, was particularly deſirous to introduce it into his own dominions; and ſuppoſing that every Engliſhman muſt be verſed in the knowledge of making whatever comes from his own country, he ſent a meſſage to requeſt that I would furniſh his artificers with ſuch inſtructions as might enable them to fabricate glaſs of a quality equal to what was made in England. Unluckily none of us happened to be ſkilled in the myſtery of a glaſs-houſe; all, therefore that we could do, was to explain the principles of the art, which Dr Buchanan obligingly undertook; and, in order to facilitate them in the acquire-

ment,

Aſia. ment, and guide them in the practice, I lent them the *Encyclopædia Britannica*, and pointed out the article where the process is fully explained. Baba Sheen, the second in authority at the port of Rangoon, and the Armenian interpreter, translated it into the Birman tongue." Aſia.

As the Birmans poſſeſs within their country the whole materials from which the beſt kinds of glaſs are prepared, there is little reaſon to doubt, that this active people would ſpeedily be enabled to reduce to practice the leſſon they obtained in the manner above mentioned; and thus, the proprietors and conductors of the Encyclopædia Britannica have the ſatisfaction to know, that the former edition of their work has contributed to diffuſe, in the moſt diſtant regions of the globe, a knowledge of thoſe arts which add convenience and elegance to civilized life. The utility of their undertaking has exceeded the limits of their own foreſight, as they have, in this inſtance at leaſt, laboured for the inſtruction and improvement of a prince and of a people, whoſe very name and exiſtence were unknown to them when their labours commenced. Happy had it been for the nations of the eaſt, had they derived from their intercourſe with Europeans no other fruits than the extenſion of ſcience, and the enlargement of their powers, by an acquaintance with that command over the different objects of nature, which human ingenuity has attained in this quarter of the world.

One manufacture on which the Birmans beſtow much attention, muſt not paſs unnoticed. It is carried on at a village called *Kyeock Zeit*, and conſiſts of the formation of idols of marble. Our author ſaw 30 or 40 large yards crowded with ſtatuaries at work, on images of various ſizes, but all of the ſame perſonage, Gaudma, ſitting croſs-legged on a pedeſtal. The quarries whence the materials are obtained, are only a few miles diſtant. The marble is brought to the village in blocks; and after being faſhioned, the images are publicly ſold to pious people. The largeſt, little exceeded the human ſize, and the price was ſaid to be 100 tackals, that is, 12 or 13l.; but ſome diminutive Gaudmas were to be diſpoſed of as low as two or three tackals. The workmen were civil and communicative. Their tools were a chiſel and a mallet, and they ſmooth the image with freeſtone and water. Many of the idols were beautifully poliſhed, which is ſaid to be accompliſhed by rubbing the marble with three different ſorts of ſtone; the firſt rough, the ſecond finer, and the third, ſuch as hones are made of. The workmen afterwards uſe the palms of their hands. This laſt operation gives it a tranſparent clearneſs, far ſurpaſſing the brighteſt poliſh that European marble ever exhibits. Such images as are deſigned for gilding, are not finiſhed ſo highly; but none of the idols are allowed to be ſold to any, except native Birmans.

149 Marble.

150 Idols.

An extenſive trade is carried on between Ummerapoora the capital of the Birmans dominions, and Yunan in China. The principal export from the Birman territory is cotton, of which it is ſaid there are two kinds, one of a brown colour, of which nankeens are made, the other white, like the cotton of India. This commodity is tranſported up the Irrawaddy in large boats, as far as a place called *Bamoo;* where it is bartered at the common market with Chineſe merchants, who convey it partly by land and partly by water, into the Chineſe dominions. Amber, ivory, precious ſtones, betel nut, and the edible neſts brought from the eaſtern Archipelago, are alſo articles of commerce. In return, the Birmans procure raw and wrought ſilks, gold leaf, preſerves, paper, and ſome utenſils of hardware. A great inland commerce is alſo carried on between the capital and the ſouthern parts of the empire, which is greatly aſſiſted by the noble river Irrawaddy, that waters the country. The chief objects of this commerce are the neceſſaries of life. Several thouſand boats are employed in tranſporting rice and ſalt from the ſouthern or lower provinces, to ſupply Ummerapoora and the northern diſtricts. Up the ſame ſtream are conveyed China ware and glaſs; alſo European broad cloth, with ſome hardware and coarſe muſlins from Bengal. Silver, lace, and precious ſtones, are brought down by the merchants.

151 Commerce.

152 Importance of the Birmans to the Britiſh.

We have treated ſomewhat minutely of the manners and ſituation of this people, becauſe they form a ſtriking exception to the general features of the Aſiatic character, as it has always exiſted among the other nations that inhabit the more fertile diſtricts of that great continent. It is to be obſerved, that the Birmans are alſo of importance, in conſequence of their geographical poſition in relation to the great Britiſh empire in India. A durable veſſel of burthen cannot be built in the Ganges without the aid of teek plank, which can only be procured from Pegu. Should the timber trade of the Birman empire therefore be interrupted, the marine of Calcutta, amounting to 40,000 tons of ſhipping, would be reduced nearly to annihilation. This marine has already been of importance to Britain. In 1794, 14,000 tons of ſhipping, almoſt entirely India built, were freighted to carry rice to England, and reduced the price of that article of food to three halfpence per pound. The maritime ports of the Birman empire are extremely commodious for Indian commerce. Britain poſſeſſes the weſtern ſide of the bay of Bengal; the Birmans the eaſtern, which is far ſuperior to the former for the purpoſes of navigation. From Cape Comorin to the Ganges, is an unbroken line of expoſed ſhore, without a ſingle harbour capable of affording ſhelter to a veſſel of 500 tons burden: But the Birmans poſſeſs three excellent ports, Negrais, the ſecureſt harbour in the bay; Rangoon, and Mergui, each of which is as convenient, and not leſs acceſſible than the Ganges, which is the only Britiſh port in the whole bay. In ſuch circumſtances, the importance to the government of the weſtern peninſula of retaining a good underſtanding with theſe people, cannot be diſputed. They are a very different race from the timid and paſſive Hindoos, whom we have conquered. Though unequal to Europeans in manufactures or in arts, yet in a climate adapted to their natural conſtitution and unfriendly to ours, they might prove dangerous enemies, in a conteſt with whom much might be loſt, and nothing can be gained.

153 The remainder of the eaſtern peninſula.

After this account of the Birmans and their empire, it will be unneceſſary to take much notice of the reſt of the eaſtern peninſula, as the inhabitants of that territory appear upon the whole to poſſeſs the ſame general character, laws, and manners. To the ſouth-eaſt of the Birman territory, the great eaſtern peninſula becomes forked, or divides itſelf into two ſeparate peninſulas, with the gulf of Siam between them. The moſt weſterly of theſe two peninſulas, is a narrow tract of

Aſia. of country called *Malacca*, which ſtretches ſouthward to a great diſtance, till it approaches the equator. The peninſula to the eaſtward of the gulf of Siam is much broader than the other, but proceeds to a much leſs diſtance ſouthward. The city of Siam ſtands at the bottom of the bay of that name, where the diviſion of farther India into two peninſulas commences. The peninſula, beyond the Siameſe territory, contains the countries called *Ciampa*, *Cambodia*, and *Cochin-China*, on the eaſt, and *Tonquin* on the north-eaſt.

154 Malacca. The iſthmus, or neck of land, by which the peninſula of Malacca joins the continent, is only about 50 miles in breadth. To the weſtward of it, at the diſtance of 260 miles, is the iſland of Junkſeilon, which yields conſiderable quantities of tin. In 1784, 500 tons of that metal were exported. Malacca itſelf yields few commodities for exportation, excepting ivory and tin. The city of Malacca, however, is a true emporium or magazine of the various rich articles of commerce brought from the ſurrounding countries. This coaſt was known to the ancients. It was celebrated for its gold, on account of which it received the appellation of *Aurea Cherſoneſus*. Some imagine this to have been the Ophir of Solomon, though others contend that Ophir was a port in Africa. One reaſon for ſuſpecting this or ſome other port in India to have been Ophir, is this, that Solomon's fleet is ſaid to have brought home peacocks. Theſe birds are natives of India, and at that early period were unknown in the interior or ſouthern coaſts of Africa. It is farther to be remarked, that on the eaſtern ſide of this peninſula, much gold is found near Pahang. This town is ſituated in N. Lat. 3° 50′, in a moſt fruitful country, at the mouth of a river which has an eſtuary of about a mile broad. The river contains much gold. Lumps of five or ſix ounces weight are ſaid to have been found. It is brought up by divers. Sometimes eight hundred weight has been exported. This place, therefore, might well be the Ophir of Solomon; and the Jewiſh hiſtorian, Joſephus, actually fixes it here.

1 *Kings*, x. 23.

Trangano or Tringoran, a ſmall town a little to the north of Pahang, is ſeated on a river near the ſea. It conſiſts of about 1000 houſes, half of which are inhabited by Chineſe, who traffic in their junks to Siam, Cambodia, and Tonquin. Trangano is moſt deliciouſly ſituated amidſt low hills, covered with the eternal verdure of undeciduous trees. Lemons, oranges, mangoſteens, and all the fruits of the Indies, grow here in perfection; and the valleys produce grain, pulſe, ſugar, and eſpecially pepper, in great abundance; but only in conſequence of the induſtry of the Chineſe, for the Malays themſelves are too indolent to make the earth yield its full increaſe. We know too little of the ancient hiſtory of this ſingular people in particular, and indeed of the whole peninſula beyond the Ganges in general, to be able to account in a ſatisfactory manner for their preſent ſtate, or their connexion with a multitude of adjoining tribes and ſtates. The ancients formed of the whole of this great eaſtern peninſula, along both ſides of the bay of Siam, a mighty empire, to which they gave the appellation of *Thinæ*, or *Sinæ*, diſtinguiſhing them from the Chineſe on the one hand, and from the Hindoos on the other. The ſimilarity of character and cuſtoms that is to be found among the whole of theſe ſtates of Birmah, Malacca, Siam, Cambodia, Cochin-China, and Tonquin, render the exiſtence of ſuch an ancient empire extremely probable. It may have been deſtroyed by Tartar conqueſt or internal revolutions, and the inhabitants may have loſt a great part of the civilization, and a multitude of the arts, which they once poſſeſſed. That this laſt ſuppoſition is not only probable, but in ſome degree true, is ſufficiently demonſtrated by a fact mentioned by Captain Symes, in the account already noticed, of his embaſſy to Ummerapoora. He ſaw in many places beautiful vaults and arches formed of ſtone or brick, ſupporting lofty buildings; but he learned, that the art of conſtructing vaults or arches is at preſent entirely loſt in the country, and that no Birman workman will at the preſent period engage to erect a building of that kind.

Aſia.

155 Character of the Malays.

The character of the inhabitants of the peninſula beyond the Ganges, appears to be more ſtrikingly marked in the Malays than any other people; and at ſome remote period, they have undoubtedly made a conſiderable figure in theſe regions, and muſt have poſſeſſed a great ſpirit of national enterpriſe. They differ from the other ſtates of the peninſula only in this, that the Arabs have converted them to Mahometaniſm. The feudal ſyſtem at preſent exiſts among them in full perfection or barbarity. They have the ſame pride of honour and delight in war that diſtinguiſh the Birmans, and that marked the character of the ancient inhabitants of the north of Europe. They are governed by petty chiefs, who are engaged in endleſs and ſanguinary hoſtilities againſt each other. Like the Birmans, the people in their perſons are robuſt, but not tall. They are active and reſtleſs, and their ferocity in war is unbounded: No enterpriſe is ſo dangerous as to deter them from engaging in it. Not only will a handful of them in a boat attempt to board an European veſſel of any ſize, and to murder the crew with their poniards; but when employed by the Dutch as ſoldiers in their wars againſt the Engliſh or Portugueſe, 14 or 20 of them have been known to ſally from a fort, under cover of the ſmoke of the cannon; and having found their way in an inſtant into one of the batteries of the beſiegers, they have ſtabbed almoſt the whole gunners while working the artillery, and retreated with little loſs, and before effectual meaſures could be taken againſt them. The Dutch are ſo cautious with regard to them, that unleſs in caſe of extreme neceſſity, they never employ above two or three of them at once as mariners on board the ſame ſhip: Yet this people, barbarous as they now are, have at one period made ſuch national exertions, that their race and language is found to extend over a very large portion of the globe. To the ſouth and eaſt of Malacca the great Aſiatic Archipelago is ſituated, containing a multitude of iſles of immenſe extent. Over a great part of theſe iſles the Malays have ſpread themſelves, and their language is ſpoken. The firſt iſland to the ſouth and ſouth-weſt of Malacca is Sumatra, the paſſage between which and the main land, is called the *Straits of Malacca*. The iſland of Sumatra is croſſed in the middle by the equator: its length is about 800 miles, and its breadth about 130. A range of mountains runs along the whole iſland, ſometimes in a double or triple chain, with beautiful valleys between them; but unleſs where cleared, both valleys and mountains are clothed with ſhady foreſts. The

156 Aſiatic Archipelago.

Aſia. iſland has long been celebrated for its gold, and a mountain under the line is called *Ophir*, which affords an additional reaſon for ſuppoſing that the ſhips of King Solomon came to this quarter of the world. It is 13,842 feet high, or two miles and 1094 yards. The Malays upon the iſland are ſaid to be ſkilful artiſts in works of fillagree, in both gold and ſilver. Sugar, ivory, teak wood, and all the other tropical productions, are found upon it; but its climate is extremely deſtructive to Europeans. Though no ſnow is ever ſeen on the iſland, yet the inhabitants of the mountains, like thoſe of other Alpine regions, are ſubject to monſtrous wens in the neck, or goitres.

To the eaſt of Sumatra, and divided from it by the ſtraits of Sunda, is the iſland of Java, in which alſo the Malays abound, and in which the Dutch have their ſettlement of Batavia. Like Sumatra, a chain of mountains runs along the middle of it, and it is extremely unhealthy to Europeans. Eaſtward of Java is the great iſland of Borneo, immediately under the line. A great part of the coaſts is in the hands of the Malays, though Moors and Javaneſe are alſo found here. It produces all the vegetable and mineral productions that are found in the other parts of the Indies. The interior is mountainous, but unhealthy; and this, like all the reſt of theſe iſlands, is ſubject to frequent and very dangerous earthquakes. The original inhabitants of this and the other iſlands in its neighbourhood are extremely barbarous, and have been driven from the ſea coaſt by the Malays and other ſtrangers. To the north-eaſt of Borneo are the Philippine iſlands; and to the ſouth-eaſt are Celebes and the Molucca iſles, beyond which is New Guinea, with a multitude of adjoining iſlands, all inhabited by barbarous tribes of little importance in a general view of Aſia. To the ſouth of all theſe iſlands is the vaſt iſland, or rather continent, of New Holland, which is ſcarcely inhabited, though equal in ſize to Europe.

157 Siam. Returning to the continent of farther India, the kingdom of Siam is ſituated, as already mentioned, at the bottom of the bay of that name, to the ſouth-eaſt of the Birman territory. The city ſtands at the mouth of a large river called *Meinam*, which fertilizes the country, and affords an internal navigation to a conſiderable diſtance. The river is deep, rapid, and broader than the Elbe. The upper part is rocky and interrupted by cataracts. At its lower part, the ſtream divides into ſeveral channels, paſſing through a level country, which it fertilizes by periodical inundations. The country is woody. The houſes, like thoſe of the Birmans, are raiſed aloft on ſtilts or poſts; but upon the river a kind of floating habitations are uſed, in which many people conſtantly reſide, and occaſionally move from place to place when the waters are high. The capital is in latitude 14° 30′, and is ſurrounded by a lofty brick wall, which has not always been able, as already noticed, to defend it againſt the arms of the Birmans. Rice is produced in amazing crops, and all the fruits of the Indies riſe up with little or no cultivation. Logwood, like that cut in Campeachy, is ſaid to be one of the productions of the country. The Siameſe territory is very narrow from eaſt to weſt, but extends northward along its own river [illegible] diſtance.

158 Cambodia. To the eaſtward of Siam is the kingdom of Cambodia, extending along the banks of its river, which flows in a courſe nearly parallel to the river of Siam. The moſt ſouthern point of the country, being the eaſtern extremity of the gulf of Siam, is called *Cape Cambodia*, beyond which the coaſt turns to the eaſtward, and the river Cambodia diſcharges itſelf into the ſea through ſeveral mouths, forming by its alluvions a very fertile tract of territory, like the rivers of Siam and of Birmah. The capital ſtands 90 miles up the river, and conſiſts only of one ſtreet, built on an eminence, to preſerve it during the inundations: The preſent city of Cambodia, is ſuppoſed to be near the ſite of *Thina Metropolis Sinarum*, of Ptolemy and Marcianus. Mr Caverhill quotes Argenſol for the proof, and ſays, on his authority, that marble ruins of an extenſive city have been diſcovered to the north-weſt of Cambodia; yet Ptolemy relates, that it was not ſurrounded with ſuch walls, nor had any thing worth mentioning. Arrian, in his *Periplus Maris Erythræi*, calls it the greateſt of the inland cities, and that it ſent to Barygaza, the modern Barochia, on the weſtern ſide of Hindooſtan, wool, thread, and *othonium ſericum*. Theſe were carried the whole of the journey by men on foot: prodigious indeed muſt the journey have been, if it is true that they went through Bactra, a detour of amazing extent. The kingdom of Cambodia was known to the Arabs, by the name of Rachmi. It was viſited in the ninth century by two Arabian travellers, who report, that the fineſt muſlins in the world were made there, and that the natives wore garments ſo fine, that they might be drawn through a middle-ſized ring. The ſame writers tell wonderful things of the *karkandan* or unicorn; but from the whole deſcription, it is evident, that they mean no other animal than the one-horned rhinoceros.

159 Ancient city.

160 Iſland of Pulo Condore. The noted iſland of Pulo Condore lies about 15 leagues to the ſouth of the weſtern channel of the Cambodia. It is ſituated in latitude 8° 40′. Its form is that of a creſcent; the length not above eight miles, the greateſt breadth about two: the whole is lofty and mountainous, and it is ſurrounded by leſſer iſles. The name is derived from *pulo*, an iſle, and *condore*, a calabaſh, from its production of that fruit. It was viſited by Dampier in 1686. Here Dampier's crew found the cuſtom to prevail which we have noticed, among the inferior claſs of Birmans, which exiſts over the whole peninſula beyond the Ganges, of the people of ordinary rank allowing their women to live with ſtrangers. Our poet, Prior, humorouſly exaggerates the practice, and by miſtake aſcribes it to the Chineſe.

> "In China, Dampier's travels tell ye,
> (Look in his index for Pagelli).
> Soon as the Britiſh ſhips unmoor,
> And jolly long-boats row to ſhore;
> Down come the nobles of the land,
> Each brings his daughter in his hand;
> Beſeeching th' imperious tar,
> To make her but one hour his care.
> The tender mother ſtands affrighted,
> Leſt her dear daughter ſhould be ſlighted;
> And poor Miſs Yaya dreads the ſhame
> Of going back the maid ſhe came."

161 Champa. Eaſtward of the eſtuaries of the river of Cambodia, is the

Asia. the small territory of Ciampa, extending about 150 miles along the shore: the breadth not exceeding 90. The people appear to be of the same race with those that inhabit the rest of the peninsula, but their chief is tributary to the Cochin-Chinese, whom, however, they excel in naval, though not in military affairs. Their ships, or junks, are extremely well built; they are chiefly employed in the fisheries, which are very considerable, and form their most important source of commerce. The Chinese send ships very frequently to the northern parts of the country laden with tea, an inferior sort of silk, porcelain, and some other commodities of that empire. They take in return gold and columbo wood, to be burnt on the tombs of their ancestors and relations, or before the altars of their divinities. It is to be observed, that a strange mixture of religions here exists, in consequence of the influence of the neighbouring nations upon this small maritime state. Many of the people are Mahometans. Others are followers of the Chinese philosopher, Confucius; a third sort are worshippers of Gaudma; and the greatest part of the people jumble all these systems together. They all agree, however, to tolerate each other.

162 Cochin-China. To the eastward of its tributary, Ciampa, the kingdom of Cochin-China begins, forming a long stripe of territory along the eastern shore of the farther peninsula of India. To the westward it is limited by a chain of lofty mountains, which run parallel to the coast of the Chinese sea, or eastern Pacific ocean. The whole of Cochin-China, beginning from the borders of Cambodia, is in form of a bow, bending into the ocean as far as Cape Varelle, in Lat. 13°, when it inclines to its northern extremity, in Lat. 17° 30′. The whole length of this great curvature is about six hundred and sixty miles, the breadth not exceeding that which we have ascribed to Ciampa. The northern borders are defended by a wall, which runs from the sea to the great chain of mountains, and forbids all approach from that quarter, as the inaccessible chain itself does every attempt of invasion from their western neighbours. The lower parts of this kingdom are overflowed during the rainy season; and here, as elsewhere in India, rice is the greatest harvest: a kind as white as snow is cultivated on the mountains and dry soils: when dressed, it is of a slimy viscous nature, and is made into paste. Sugar, cotton, pepper, and other Indian commodities, are also cultivated here in great abundance by the labour of free men, and are articles of commerce with China. Among other commodities which are exported, mention is made of silk, and of certain kinds of wood much esteemed in the east, such as, aloes wood, or agallocha, erroneously called *eaglewood*, columbo, and others of value, either in mechanics, or for their sweet scent. The price of columbo wood on the very spot is five ducats a pound, at the ports sixteen, and in Japan, to which much is exported, two hundred. A pillow of this wood is the highest luxury of the orientalists, particularly of the Japanese, who will give three or four hundred ducats per pound for a piece big enough for that purpose. The agallocha bears a good price, great quantities being shipped for Hindostan for the use of the Hindoos, to burn their dead, who seem to emulate the ancient Romans in the aromatic profusion of their funeral piles.

The war boats of the Cochin Chinese are very numerous, and rebuilt upon those of the Birmans. [illegible] allotted to the defence of the coast are manned [illegible] and highly varnished, rowed with fifty oars, and carry a cannon at the head, and two small ones on each side. The navy of the country is partly manned, every district being bound to furnish a certain number of sailors, who serve with alacrity, as they are well treated, and their wives and children supported during their absence. They are dressed in a jacket and cap, with a gilt helmet, and a cloak which leaves their right arm quite bare.

The Cochin-Chinese have considerable fisheries, and both consume and export fish in large quantities. They make use of elephants [illegible] On the backs of these huge animals they place a machine like the body of a coach, which conveys of outside and inside passengers about thirteen or fourteen persons. When the elephants arrive at a river, they take the water very readily, and even convey their fare in perfect safety over an arm of the sea a mile wide. The people of this country resemble the Chinese in their persons, but they are less in body, and more brave and active. The complexion of those on the coast is olive: that of the inland inhabitants near the mountains is fairer, and approaches to that of Europeans.

164 Tonquin. The bay of Tonquin begins near the wall of Cochin-China, at the northern extremity of that kingdom. The entrance of the bay is bounded on the eastern side by the island of Hainan. The tides of this bay have long been remarked on account of the following peculiarity, that a single flux and reflux occupies a full period of 24 hours. The kingdom of Tonquin is very narrow towards the south, at the Cochin-Chinese wall. To the west it is there bounded by the Cochin-Chinese chain of mountains, which soon retires, and gradually leaves a larger and larger expanse to the great plain of which this kingdom consists. The country is very populous, being thick set with villages. It is watered by a river, which, coming from the north or north-west, is called by the name of the country, Tonquin. It enters the bay by two mouths, one of which, having only 12 feet water, is frequented by the flat-bottomed vessels of the Siamese and Chinese; but the other being deeper, is frequented by European vessels. The river is subject, like all others in that territory, to periodical floods, which fertilize the soil, and enable it to give forth abundant crops of rice and other productions of warm climates. The natives are acquainted, like the Birmans, with the practice of rearing occasional dwellings for any temporary purpose. About six leagues from the mouth of the river is the village of Domea, [illegible] consisting of a hundred houses; yet, on the arrival of the European ships, it soon increases to a large town. The natives resort, for the sake of trade, from all parts. Houses suddenly spring up; for being only constructed of frames of bamboo, and the roof of palm or other leaves, a temporary town is quickly formed, in which a fair is kept as long as the ships remain in the harbour. Here, as well as in Cochin-China, Chinese opinions and notions prevail in a considerable degree. The religion of the country appears to be that of Bodho, or Gaudma. Here also, as among the Birmans and all the other nations of the peninsula beyond the Ganges, the strange practice pre-

Aſia. vails of rendering the teeth black by means of art. All perſons, high or low, rich and poor, are under the neceſſity of undergoing a dyeing proceſs, for the purpoſe of avoiding that diſgrace to human nature, of having teeth white, like thoſe of dogs or elephants. Prior mentions this cuſtom, but transfers it to the Chineſe:

"In China, none hold women ſweet,
"Unleſs their ſnags are black as jet:
"King Chiku put nine queens to death,
"Convict on ſtatute iv'ry teeth."

165 Review of the eaſtern peninſula. From the brief deſcription here given of theſe countries, it will not be difficult to underſtand the phyſical aſpect of the great peninſula of farther India, and the political diviſions which have reſulted from it. Aracan on the weſt, and Cochin-China on the eaſt of the peninſula, bear a conſiderable reſemblance to each other. They both conſiſt of a narrow tract of fertile territory, extending along the ſhore, and having behind them towards the continent a large chain of lofty and rugged mountains, which form the natural as well as political boundary. The reſt of the peninſula is chiefly formed in the following manner:—Several chains of mountains run from north to ſouth. Between every two chains is a tract of fertile country, watered by a large river, proceeding alſo from north towards the ſouth. Each of theſe valleys forms a kingdom, which is long and narrow, and bounded to the eaſt and the weſt by a chain of mountains: Thus are formed the countries of Birmah, Siam, Cambodia, and Tonquin. The narrow peninſula of Malacca, however, muſt be regarded as a ſort of territory by itſelf, probably formed by a continuation to a great diſtance ſouthward of the chain of mountains that divides the Birman from the Siameſe territory. Were it poſſible to unite into one empire the various nations which we have mentioned as inhabiting this vaſt peninſula of India to the eaſtward of the Ganges, the vigorous character of the people would probably render them extremely formidable to their neighbours the Chineſe on the north-eaſt, as well as the Hindoos of the weſtern peninſula. Any union of theſe countries, however, into one ſtate, though a poſſible event, could only be accompliſhed during a great length of time, and after many ſtruggles, in conſequence of the bravery of the people, and the readineſs with which they engage in war. The Birmans have indeed conquered Pegu, but only in conſequence of a long continuance of the moſt ſanguinary conflicts, which exhauſted the population of both ſtates, and almoſt deſtroyed the inhabitants of the conquered country. Aracan was, no doubt, more eaſily united to the Birman empire; but this in all probability aroſe from its being accidentally ill governed, and perhaps alſo from its vicinity to Hindooſtan, which had led its inhabitants to acquire much of the feeble character of the Hindoos. In the conteſts between the Birmans and the Siameſe, it appeared that neither of the nations could be ſubdued, and that before the one of them could enlarge its territory, it muſt nearly exterminate the population of the other.

166 China. From the peninſula of farther India, we proceed north-eaſtward to China, of which we ſhall not here find it neceſſary to ſay much. As already mentioned, it is the tract of country which forms the gradual deſcent from the high regions of Tartary towards the Pacific ocean on the eaſt. The dominion of the Chineſe emperor extends over a civilized people, from the ſtraits of Hainan, in N. Lat. 20° 13′, to the extremity of the province of Pe-tche-li, in Lat. 41° 15′, comprehending a ſpace of nearly fifteen hundred miles in length, and in breadth above a thouſand. Or, more accurately, according to the information obtained by Lord Macartney's embaſſy, China Proper includes a ſpace of 1,297,999 ſquare miles, inhabited by a population of 333,000,000. The iſland of Hainan, already mentioned, is at the ſouthern extremity of the empire, but it is only half ſubdued, the natives in the interior of it maintaining their independence amidſt lofty mountains. It produces gold, and the *lapis lazuli*, which is in great requeſt among the Chineſe, for giving a blue glazing to their porcelain. It has conſiderable fiſheries on its coaſts. From the continent oppoſite to this iſland the coaſt proceeds towards the north-eaſt to the bay of Canton, which is the port frequented by Europeans. At Canton the celebrated imperial canal begins, or paſſage by water, which reaches from hence within land to Pekin, and the extremities of the empire, an extent of about 1800 Engliſh miles. Part of this inland navigation is formed by rivers and lakes, and the reſt of it conſiſts of a canal 900 miles in length, and a fathom and a half in depth. On the courſe of this internal navigation, multitudes of populous cities are ſituated, amidſt a country in which the cultivation of every part of the ſoil is carried on with the moſt minute attention and economy.

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167 Iſle of Hainan.

168 Canton.

Of the coaſts of China, and indeed of the country at large, not much is known, in conſequence of the jealouſy which they entertain of all foreigners, and of the great rigour with which they put in force their prohibition to trade in any of their ports except Canton.

169 Coaſts of China.

The next province to the north-eaſt, proceeding along the coaſt, is called *Foo-tchien*. The country is hilly and irregular, but, by the induſtry of the inhabitants, the ſides of the hills are formed into terraces, aſcending in a ſeries of twenty or thirty, one above another; and theſe terraces are often continued for ſeveral miles in length. Water is forced up to theſe terraces in pipes of bamboo, and grain and other vegetables are cultivated upon them. On an iſland called *A-mwy*, on the coaſt of this province, is a vaſt rocking ſtone, of 40 tons weight, moveable by the ſlighteſt touch. Oppoſite to the coaſt, alſo, is the iſland of Formoſa, 90 leagues in length and 30 in breadth.—The next province northward on the eaſtern coaſt is called *Tche-Tchiang*. Like the reſt of China, it is amazingly commercial. It is remarkable for its rich embroidered ſilks, its timber, its foreſts of bamboo, its ſalt works upon the coaſts, its muſhrooms, hams, and vegetable tallow. A great part of the province has been won from the ſea, as Holland was by the Dutch. It is guarded by immenſe mounds from the fury of the waves; and theſe mounds remain as ſtupendous marks of the induſtry of this moſt populous nation. They far exceed the ſimilar dykes of Holland, as they have a much more powerful ocean to reſiſt than that which aſſails the coaſt of the European low countries.

The next province northward is called *Kyang-Nan*, near the northern boundary of which is the great and rapid river Whang-ho-hoo. Among the curioſities of this province is ſaid to be the worm that fabricates not the

170 Wild ſilk worms.

Aſia.

the common ſilk, but that mentioned by Pliny, which he and the ancient writers believed to be the only ſpecies of that beautiful production. Pliny repreſents ſilk as a vegetable, combed from the leaves and branches of trees. His error is not ſurpriſing; for the wild worms of this province, which reſemble caterpillars, ſpin their webs on ſhrubs and buſhes, and furniſh as great quantities as the domeſtic worms. This ſilk coſts in a manner nothing, and is ſo ſtrong that the goods made from it are uncommonly laſting.

171 Northern boundary of China.

From hence northward, the Chineſe coaſt is expoſed not to the open ocean, but to a gulf, the eaſtern ſide of which conſiſts of the peninſula of Korea. In Lat. 38° 12′ begins the province of Pe-tche-li already mentioned, which in N. Lat. 30° takes a north-eaſtern direction, and on the ſide of the gulf finiſhes China Proper, in N. Lat. 40°. The capital, Pekin, is in this northern part of the empire, about 100 miles from the mouth of the river Pei-ho. The empire ends about 150 miles farther, in Lat. 40° 45′ where the celebrated wall begins, whoſe length in a ſtraight line is 700 or 800 miles, and including its windings and aſcents over craggy mountains, or deſcents into deep valleys, may be eſtimated at double that length. It was intended as a bulwark againſt the invaſions of the Tartars on this moſt acceſſible ſide of the empire; but this purpoſe it has never ſucceſsfully fulfilled.

172 Climate.

The climate of China is liable to ſevere viciſſitudes of heat and cold. The heat is powerful during the ſummer, becauſe a great part of the country is in a ſouthern latitude, and becauſe its great extent does not admit of its being cooled by breezes from the ſea. At the ſame time, its vicinity to Siberia on the north, and to the elevated country of Tartary on the weſt, the mountains of which are covered with perpetual ſnow, expoſe it to a degree of cold in winter greater than what is known in the ſouthern parts of Europe. It is alſo to be remarked, that the Chineſe rivers, eſpecially towards the northern parts of the empire, have a far more rapid current than thoſe of either peninſula of India: the reaſon is, the country of China is itſelf much more elevated than India. It riſes far more ſuddenly from the Pacific ocean than India does from its own ſeas. Hence it is enabled to oppoſe a more powerful front to the waters which waſh its coaſts, and which, impelled by the trade winds, would otherwiſe very rapidly encroach upon the land in this quarter of the globe.

173 Polygamy of the Chineſe.

In China, domeſtic life is undoubtedly upon a worſe footing than in the Indian peninſulas. The Hindoos who have not become Mahometans are monogamiſts; and we have ſeen that the ſame law prevails among the Birmans and the other nations of the eaſtern peninſula. But in China polygamy has always been allowed. This neceſſarily produces an unſocial mode of living, and the jealous ſeclusion of one half of the human ſpecies which uniformly attends the exiſtence of ſuch a law. It is not improbable, however, that the permiſſion of polygamy, accompanied, as it is in China, by a law of ſucceſſion, which admits of right of primogeniture, but divides the whole property of the parents equally among the children, may contribute in no ſmall degree to the production of the crowded population that is found to exiſt in this empire. The luxury and ſenſuality of rich men is thus directed into a particular channel. Inſtead of becoming oſtentatious and magnificent in their dreſs, equipage, and houſes, they are led to expend their wealth in ſupporting and rearing up very numerous families.

Aſia.

174 Conſtitution of the Chineſe government.

The ſtructure of the Chineſe government perhaps deſerves even more attention from philoſophers than it has hitherto obtained. They acknowledge in their emperor abſolute power in the moſt unlimited degree. From the nature of human affairs, however, it is evident that this power can be directly exerted over only a few individuals of the immenſe ſociety of which he is the head. The people at large muſt neceſſarily be governed by delegated authority; and the value of the conſtitution of the ſtate, or of the mode of government, muſt depend upon the manner in which a ſelection is made of thoſe magiſtrates to whom the imperial power is intruſted. The Chineſe emperor, like other Aſiatic princes, will naturally be led to paſs much of his time in the luxury of his palace among eunuchs and women. Were the nomination of the magiſtrates of the empire altogether intruſted to ſuch a man, it is evident that the adminiſtration of affairs would ſpeedily go into confuſion, and uſurpation and anarchy prevail. This, however, rarely occurs; and it is the peculiar nature of the Chineſe government to reconcile deſpotiſm with a regular and prudent adminiſtration of affairs, and the luxury and weakneſs of the prince, with fidelity and ability on the part of his miniſters. Foreign conqueſt does not alter this order of things. The ſtrangers ſpeedily coaleſce with the vanquiſhed people, and the conqueror ſubmits his arbitrary will to the cuſtoms that he finds eſtabliſhed among a wealthy and a numerous people. Hence the civilization of China has exiſted from the remoteſt antiquity. It has had periods of interruption and of anarchy, during which the nation has ſubmitted to ſtrangers; but theſe ſtrangers ſoon ceaſed to be known as ſuch. The ancient laws of the empire, by the admiration which they excited, ſubdued the minds of the barbarians, whoſe arms had proved irreſiſtible.

The oſtenſible maxim of the Chineſe government or conſtitution is this: that paternal authority is in all ſituations to be reſpected and implicitly obeyed; that the emperor is the father of the people, and to be regarded with boundleſs reverence as ſuch; that all inferior magiſtrates are to be regarded in the ſame point of view; and the ſeverities they inflict are to be conſidered not as the puniſhment of criminals, but as the chaſtiſement of children intended for their benefit. From the nature of the human character, however, it is evident that this fiction, applied to a Tartarian conqueror recently ſeated upon the throne, would only go a ſhort way to preſerve the tranquillity of the ſtate, and that, even under a long eſtabliſhed line of hereditary princes, it would have little effect in reſtraining the ambition of enterpriſing individuals, or in preſerving the ſubmiſſion of a diſcontented people. It may operate at times perhaps as a ſalutary prejudice on the minds of the weak and ignorant, or it may afford a plauſible juſtification of that implicit obedience in the people, and abſolute power in the prince, which are eſtabliſhed and maintained by more powerful means; but farther its influence can ſcarcely extend.

The radical principle of the political conſtitution of China muſt conſiſt of a more powerful and efficient

principle,

Aſia. principle, which appears to be this:—The law, or ancient cuſtom of China, ſo arranges affairs, that the beſt informed men in the country, and thoſe whoſe characters are moſt unexceptionable, ſhall at all times poſſeſs the power of the ſtate and the adminiſtration of public buſineſs. Literature there affords the means of advancement; and China affords the ſingular example of a country governed by its men of letters. In this empire no order of nobility or of magiſtracy is hereditary. The whole country, however, is ruled by a privileged claſs of individuals called *mandarins*, and it is upon the mode in which this ruling claſs is nominated, or ſelected from the maſs of the people, that the peculiarity of the Chineſe conſtitution and its whole value depends. There are two ſets of mandarins, the civil and the military, who are employed in theſe different departments of the public ſervice. Of each department there are ſix or ſeven claſſes or orders of mandarins, aſcending above each other in a regular gradation of rank. The ſon of the loweſt perſon in the ſtate is allowed at certain appointed periods to preſent himſelf for trial before the mandarins of his diſtrict, either civil or military. If his character is without reproach, and if, after various examinations, his learning or ſkill in the appointed exerciſes appear complete, he is admitted to the rank of a mandarin of the loweſt order, which makes him a candidate for certain public offices, as the emperor, unleſs in very ſingular caſes, only confers public employments upon mandarins thus found duly qualified. After a certain time he may preſent himſelf for trial in his diſtrict before the next ſuperior order of mandarins, and, if received into their number, his rank in ſociety is proportionably augmented, and he becomes a candidate for ſtill higher employments. He may thus aſcend by force of talents, and of an unblemiſhed reputation, through all the orders of mandarins, till he is enrolled in the higheſt claſs, out of which the miniſters of ſtate, governors of provinces, and commanders of armies are appointed. In the different examinations and trials, favour or hereditary intereſt can give little aſſiſtance to the candidate; for no mandarin ever holds an office in the province where he was born; ſo that the judges cannot be the kindred of the perſons who appear before them for examination or trial.

175 Apparent perfection of the Chineſe conſtitution.

One would almoſt ſuppoſe that ſuch a conſtitution muſt be abſolutely perfect. The eſtabliſhment of a hereditary reigning family at its head repreſſes inordinate ambition, and prevents military uſurpations by ſoldiers of fortune. As the emperor poſſeſſes the power of appointing any one of the imperial family as his ſucceſſor, the hazard is avoided of having at any time an idiot or an infant placed at the head of the ſtate. The expence of his court can be of little importance in this mighty empire. The abſolute power aſcribed to him can do little harm, as he is at all times ſurrounded by the ableſt and moſt virtuous men of the nation. The manners of the people cannot become corrupted, becauſe vice is not kept in countenance by the bad example of powerful men; as diſtinction and power can only be attained by perſons whoſe integrity of conduct is proved to the ſatisfaction of men of advanced age, who have themſelves riſen to eminence by the accompliſhments of their minds and the purity of their lives. It muſt be difficult, or almoſt impoſſible, to diſturb the internal tranquillity of ſuch a nation, becauſe the ableſt men that it contains are at the head of all affairs; and the power which reſults from uniting intellectual ſuperiority to the authority of office muſt evidently prove irreſiſtible. The adminiſtration, alſo, of public buſineſs will in general be well conducted, becauſe the inferior mandarins, unprotected by family connexions, will have no means of ſecuring indemnity for ill conduct, and becauſe their ambition will naturally lead them conſtantly ſo endeavour to recommend themſelves to thoſe of a ſuperior claſs, whoſe public approbation affords the only means of obtaining farther preferment. Accordingly, in no country in the world has any government found it practicable to execute and keep in repair ſuch immenſe public works as are found in China. Their prodigious canals and regular roads, together with the immenſe public magazines of grain accumulated to guard againſt any partial or general ſcarcity, demonſtrate this to the ſatisfaction of every traveller. Aſia.

176 Bad effects of the Chineſe conſtitution.

Yet this apparently unexceptionable government, which produces a numerous, an induſtrious, a peaceful, and wealthy people, does undoubtedly contain in a moral or intellectual point of view, ſome great and radical defect. It is true, that under it men become no worſe; but it is alſo true that they become no better. No improvements are ever made; arts and ſciences have remained for ages in the ſame ſtate; invention is unknown: Imitation, regularity, and routine, pervade every order of ſociety, and lull the human faculties into everlaſting ſlumber. Though the Chineſe annals extend to many thouſand years of civilization, yet in a few centuries, the Europeans, emerging from barbariſm, have been able to ſurpaſs them in every ſcience, and almoſt in all the arts of life. The preſent Chineſe are preciſely what their forefathers were 4000 years ago, and ſhould their political arrangements continue for ages to come, there is no reaſon to believe that they will riſe above their preſent ſtate. With all their literature and all the encouragement they give to it, they do not yet practiſe alphabetical writing; but having a mark for every ſeparate word, it is neceſſary for them to ſpend many years in learning to write and read. Though they have been acquainted with gunpowder from a very remote antiquity, the military art among them is ſo contemptible, or ſuch is underſtood to be the feebleneſs of their character, that it is believed an European army of 100,000 men, would find little difficulty in dethroning their emperor, and ſeizing the government of the country.

177 The defect of the conſtitution of China.

The imbecility of character, or the ſtagnation of intellect which takes place in China, cannot be aſcribed to religion as among the ſuperſtitious Hindoos, for they tolerate all religions: They even admit of no religious eſtabliſhment, and the greater number of them are ſuppoſed, as already mentioned, to be of the ſame religion with the more vigorous and active Burmans. The weakneſs of the Chineſe, therefore, and want of progreſs in improvement, is in all probability to be aſcribed to the manner in which power and preferment are obtained under their political conſtitution. In all countries the higher claſſes of ſociety are apt to be afraid of novelties, becauſe their ſituation cannot be made better. The lower claſſes, on the contrary, perceiving

Aſia. ceiving themſelves at the bottom of the wheel of fortune, readily ſet changes at defiance, and are fond of whatever promiſes to improve their condition. Hence they applaud and patronize, though frequently to their coſt, the fearleſs, the ambitious, and the contrivers of whatever is bold or uncommon. The higher claſſes naturally oppoſe all this, and patronize among their inferiors the qualities of caution, docility, ſubmiſſion, and whatever is fartheſt from innovation or an impatience of controul. In every ſociety, ambitious men regulate their conduct in the way beſt calculated to recommend them to thoſe from whom promotion comes. Hence in England, in conſequence of the exiſtence in the preſent conſtitution of a portion of popular patronage, aſpiring individuals have often attempted to recommend themſelves to notice by turbulence, and by loud declaration that all was wrong and ought to be altered. But in a ſociety arranged like China, every candidate for preferment muſt neceſſarily ſtudy to regulate his conduct and manners in the way moſt acceptable to his ſuperiors, who in that country are a ſet of wealthy and prudent old men. He will, therefore, like a ſtudent on trial for a degree at one of our univerſities, avoid whatever looks like novelty, raſhneſs, or diſreſpect for thoſe above him: He will labour to ſpeak as they ſpeak, and to think as they think: thus ambition itſelf will make him tame and ſubmiſſive, and the paſſion for diſtinction will render him careful to keep in the beaten track, and to ſubdue his mind to an unqualified acquieſcence in whatever has been long eſtabliſhed. A ſociety, whoſe moſt vigorous members are thus conſtantly occupied in ſubduing their own minds, and reducing them to this paſſive temper and to a correſponding demeanour, will neceſſarily poſſeſs the character of prudence, languor, timidity, and perpetual old age: It will hate novelty and invention, which will render improvement impoſſible, becauſe all improvements are new, and the reſult of a reſtleſs ſpirit. Could the Chineſe conſtitution be reverſed; were the firſt or loweſt claſs of mandarins elected by the multitude, or by perſons of moderate wealth: were the ſecond claſs elected by the firſt, the third claſs by the ſecond and ſo upwards; it is evident, that the intellectual character of the people would ſpeedily alter, and they would become as reſtleſs and enterpriſing, as they are now paſſive and ſtationary. That the happineſs of this multitude of people would not by ſuch a change be increaſed, is undoubtedly very true; that they might even in conſequence of it be expoſed to many ſanguinary convulſions, is alſo very probable: but their rank in the ſcale of intelligent beings would be altered, and their importance among nations would be immenſurably increaſed. Foreigners would ceaſe to be objects of terror to a people ruled by men of an enterpriſing character: To preſerve tranquillity at home, it would be found neceſſary to have recourſe to objects of diſtant enterpriſe: the immenſe population of this empire would enable and compel it to cover all Aſia with its colonies; to fill the Indian ocean with its fleets, and the iſles with its commercial and political eſtabliſhments.

178 Korea. Adjacent to the north-eaſtern quarter of China, and oppoſite to a part of the Chineſe coaſt, is the peninſula of Korea, extending from latitude 42° 50′ to latitude 34°; bounded on one ſide by the gulf of Pe-tche-li, and on the eaſtern ſide by the Japaneſe gulf. Japan extends the whole length of the coaſt of Korea, and even ſtretches beyond its ſouthern point. Korea is of an oblong form; about 150 leagues in breadth, and 480 in length. Its inhabitants are a mixed people, and have been conquered at different periods by the Japaneſe, the Tartars, and the Chineſe. The yoke of China, however, is very light, as the Chineſe fear, that ſevere treatment might at ſome period induce them to unite with the Ruſſians, who have advanced through Siberia towards the Chineſe frontiers. The Korean [illegible], and produces moſt of the European furs and hard ware; it was protected by a wall to the north-eaſt, which, however, did not prevent a Tartar [illegible], and it now pays [illegible]. The government is [illegible], and the cuſtoms and laws reſemble thoſe of the Chineſe. The Koreans carry on a great commerce yearly with China, and clandeſtinely with Japan, the Philippine iſles, and perhaps Java: They alſo trade with the Ruſſians to a conſiderable extent, and procure from them large quantities of furs, which they convey to China, and repreſent there as the produce of their own country. To facilitate their illicit trade with the Japaneſe, the latter have ceded to them a ſmall iſland called *Sa-ma* near their coaſt. As they poſſeſs abundance of European goods, no part of which they purchaſe in China, they are underſtood to obtain them by their trade with the Dutch at Batavia.

179 Liquejo iſles. To the eaſtward of the Chineſe coaſt, and ſouth of the peninſula of Korea, are ſeveral iſlands called the *iſles of Liquejo*. The moſt conſiderable is Kintſchin, extending north and ſouth between latitude 26° 28′ and 25° 45′. It is about 50 leagues long, and 15 broad; the eaſt and ſouth parts of it are ſkirted by numberleſs little iſles and rocks. The inhabitants are chiefly Chineſe, who fled from the Tartars at the time of the laſt revolution; they export conſiderable quantities of cowries of the ſame ſpecies that is found in the Maldive iſles: From theſe ſhells is prepared a white varniſh. They alſo export a ſort of large flat ſhells, which, when poliſhed, are almoſt tranſparent, and are uſed by the Japaneſe in their windows inſtead of glaſs.

180 Japan. To the eaſtward of Korea are the iſles of Japan; they extend from latitude 30° to 40° north: their longitude is from 143° to 161° eaſt. The ſurrounding ſeas are ſtormy and filled with dangerous rocks; the climate is changeable and ſubject to frequent rains; thunder is frequent, and earthquakes ſo common, as not to be regarded, unleſs, which is often the caſe, they produce dangerous conſequences; the ſummer heat riſes in July and Auguſt to 100 degrees of Fahrenheit's thermometer, and the cold of winter is proportionably ſevere; the country is everywhere mountainous, and the people of a mixed race from the neighbouring countries, but poſſeſſing a very active character. See JAPAN.

181 Chineſe Tartary. To the north of the wall of Korea and of China, Chineſe Tartary begins. It is in general inhabited by Tartars in a paſtoral ſtate, ſubject to the preſent imperial family of China, who are themſelves Tartars. This country extends northward to the river Amoor or Saghalien. This river takes its riſe from the Keutaiham mountains, about the latitude of 49° and longitude 119° eaſt from Greenwich; and is here called *Gun*. Its direction is nearly north-eaſt; and at the diſcharge

182 The river Amoor. *Sauer's Expedition to Ruſſia.*

Aſia. of the Nirza, where the city of Nertſhinſk is ſituated about latitude 52° it bears the name of the Shilha. This courſe it continues to latitude 52½°, its moſt northern extremity, where the Tungooſe call it *Amoor*, and the Chineſe *Seghaalien Ula* (black mountain river, from the oak foreſts on the mountains hereabouts, which the Chineſe call *blackwood*). From hence it is navigable in veſſels of moderate ſize, having received conſiderable ſupplies from the torrents ruſhing down the eaſtern and northern mountains, as alſo from a very conſiderable river flowing from the ſouth-weſt, and called the *Argoon*, which diſcharges itſelf into the Amoor, about 180 miles eaſt of Nertſhinſk. In the vicinity of theſe parts the Ruſſians have ſeveral forts. From latitude 52½° to 47½° it flows nearly ſouth-eaſt, receiving in its courſe a number of rivers both eaſt and weſt. The Tſhukir has its ſource from this ſide of the ſame mountains as gave riſe to the Olekma and Aldan, (both emptying themſelves into the Lena), and flowing nearly ſouth, joins with the Silempid, which flows from the vicinity of the Ud; keeping nearly a weſtern courſe into the Amoor. All theſe rivers are navigable for boats nearly to their ſource. The country is very mountainous, but the plains and valleys are ſpacious and fertile: the low country, however, labours under the diſadvantage of being ſubject to inundations and earthquakes, which are very frequent.

No rivers of any importance join the Amoor from the eaſt, except the two above mentioned. The Nonni Ula, however, a very large river which takes its riſe about the latitude of 51°, and longitude 123°, makes a conſiderable inland circuit, and empties itſelf into the Amoor at its ſouthern extremity, about the latitude of 47½°. Another conſiderable river, the Uſuri, loſes itſelf in the Amoor nearer its eſtuary, about latitude 48½°. It riſes from the lake Hinka, and has a communication after a ſhort day's journey by land with the ſea of Japan. It now flows in its own channel north-weſt into the ſea of Ochotſk, about the latitude of 52½°, oppoſite the iſland Saghaalien. This river is well ſtocked with fiſh, and its borders are covered with foreſts of oak, walnut, birch, and different ſorts of pines. The ſoil is very rich, the climate mild and healthy. The whole courſe of this great river and its tributary ſtreams is ſubject to the Chineſe, or inhabited by people under their protection. It was diſcovered by the Ruſſians in 1639 by means of ſome Coſacks: the Ruſſians were delighted with the diſcovery of a river which report made to caſt up gold and ſilver, and its neighbourhood to abound with the moſt precious furs, cattle, and fruit: the Ruſſian coloniſts of Siberia emigrated thither in crowds, and depopulated their former country. They founded a fort in latitude 53°, which they called *Albaſin*. The Chineſe burnt it in 1680, and carried the garriſon priſoners to Pekin; but it was rebuilt and ſtrongly garriſoned, till it gave ſuch ſerious cauſe of jealouſy, that the affair was at laſt terminated in 1689, by a treaty at Nertſhinſk, upon the river Indoga, in the reign of John and Peter afterwards ſurnamed the *Great*, and of Kang hi, emperor of China. Had the Ruſſians obtained the poſſeſſion of Amoor, and of the foreſts and fertile territory in its vicinity, they might ſoon have got the command of the ſea of Japan and of the coaſts of China, by deſcending the river with their fleets. Even by marching from this river as from a magazine of arms and proviſions, they could without difficulty have aſſaulted the Chineſe empire, with an army trained in the diſcipline and the military tactics of Europe. By the treaty of Nertſhinſk, however, the Chineſe empire was declared to extend as high as Lat. 56° 32′. Its weſtern limit is near the lake Baikal, at the northern front of the high region of Tartary, the greateſt part of which alſo it includes. Beyond this, to the north and weſt, the territory is claimed by the Ruſſians, who have ſettlements in various ſituations, and are in a great meaſure maſters of the Tartar inhabitants of different tribes. Theſe tribes are apt to become diſcontented with the Ruſſian government; hence great numbers of them have recently emigrated to the Chineſe territory upon the river Amoor. In the year 1787, there emigrated from the Ruſſians no leſs than 6000 of the tribe called *Yakuti*, with all their cattle and goods, and put themſelves under the protection of the Chineſe. Thus at preſent upon the river Amoor, a mixed race of Chineſe, and of people from all the Tartar and Siberian tribes, is uniting in a fertile country under the government of China, and will probably form out of their ſeveral dialects a new language of their own. The Chineſe juſtly conſider them as a valuable advanced guard to their frontiers, and give them every encouragement, by aſſiſting them in the cultivation of grain, and in carrying on trade with Korea and other places in their neighbourhood. Aſia.

Paſſing to the north of the Amoor and of the ſtreams that flow into it, we come to Siberia, the proper country of the rein-deer, and of men who paſs the winter in holes dug in the earth, to protect them againſt the ſeverity of the climate. The whole territory inclines, as already mentioned, down toward the polar circle: but the ſurface of the country is various, and the coaſts exhibit ſome peculiarities. Oppoſite to the mouth of the Amoor is the iſland of Sagalien, inhabited by a peaceable people, little known either to the Ruſſians or Chineſe. The iſland is 160 miles long, and 80 broad. It is ſituated at the mouth of the ſea or gulf of Ochotſk, which has the main land of Siberia on the weſt, and the peninſula of Kamtſchatka on the eaſt. The Ruſſians are ſettled on both ſides of the bay. This peninſula having been viſited of late years by different European navigators, has been deſcribed at leaſt as minutely as its importance on the map of Aſia requires. It is in general very mountainous; but a part of it which is level contains a deep rich ſoil compoſed of black earth. Firs, common pine, and larch trees of a tolerable ſize, with birch, poplar, aſh, and mountain aſh, cover the hills in the middle of the peninſula. The underwoods are currants, dog-roſes, hawthorn, alder, and buſhes producing berries. The climate in the ſouthern parts is chilled by the ſea breezes, and in the northern by the cold winds from Siberia; but in the centre of the peninſula a ſheltered valley produces very fine cabbages, potatoes, turnips, carrots, &c. together with buck-wheat and rye. Hemp alſo grows remarkably well, but there is little neceſſity for cultivating it, as the nettle anſwers every purpoſe equally well. The Kamtſchadels and Ruſſians make ſewing thread of this laſt plant, the nettle, and fabricate from it their fiſhing nets, which, if uſed with caution and properly dried, ſerve them four or five years; the proceſs 183 Kamtſchatka.

Aſia. ceſs of preparing it is nearly the ſame as that for hemp. On a good ſoil the nettle grows to the height of ſix or ſeven feet; the fibres are much finer, and a thread of equal thickneſs is ſaid to be ſtronger, than that made of the beſt hemp. The country is very ſubject to earthquakes, and has ſeveral volcanoes and hot ſprings.

In this quarter of the globe the coaſts of the two great continents of America and of Aſia begin to approach each other. From the American coaſt, oppoſite to Kamtſchatka, extends to a conſiderable diſtance into the ocean the peninſula of Alyaſka. From the point of this peninſula a ſucceſſion of iſlands called the *Aleutan iſles*, in the form of a creſcent, croſſes over to Kamtſchatka. Theſe iſlands are moſt cloſely joined where they approach the American continent, and the intervals between them become more conſiderable near the Aſiatic ſhore. The concavity of the creſcent is towards the north. The iſlands are, in general, inhabited; but the natives have been ſubdued by the Ruſſians, or rather by the bodies of men who have been ſent thither by different trading companies for the purpoſes of hunting and fiſhing. One of the Aleutan iſlands called *Oonalaſhka* is worthy of attention, it is in north latitude 53° 45′, and eaſt longitude 193° 47′. It is very mountainous, and the natives live chiefly by fiſhing; they are of a middle ſize, of a very dark brown and healthy complexion, with round features, ſmall noſe, black eyes and hair, the latter very ſtrong and wiry; they wear ſeal ſkins, with the hair outward, faſtened like a carter's frock; they go bare-footed, unleſs when walking on the rocky beech, when they wear a kind of awkward boots made of the throat of the ſea lion, ſoled with thick ſeal ſkin, which they line with dry graſs. The men ſometimes wear a kind of clothing made of the ſkins of birds, with the feathers occaſionally outward or inwards; the ſkin ſide is died red, and ornamented with ſlips of leather hanging down to a conſiderable length: the ſeams are covered with thin ſlips of ſkin, ornamented or embroidered with white deers hair, goats hair, and the ſinews of ſea animals died of different colours; they alſo wear light pantaloons of white leather: the men have their hair cut ſhort; the women wear theirs ſhort before, combed over the forehead, and tied in a club on the top of the back part of the head. In wet weather or when at ſea they wear a dreſs formed of the inteſtines of ſea animals, the bladder of the halibut, or the ſkin of the tongue of a whale; it has a hood to cover the head, and is tied cloſe round the neck and wriſts, ſo that no water can penetrate; it is nearly tranſparent, and looks well. The men wear a wooden bonnet ornamented with the whiſkers of the ſea lion and with beads. Their baidars or boats, which are the admiration of travellers from the eaſe with which they are navigated, are built in the following manner: A keel eighteen feet long, four inches thick on the top, not three inches deep, and two inches, or ſomewhat leſs, at the bottom. Two upper frames, one on each ſide, about an inch and a half ſquare, and ſixteen feet long, join to a ſharp flat board at the head, and are about ſix inches ſhorter then the ſtern, joined by a thwart, which keeps them about twelve inches aſunder. Two ſimilar frames near the bottom of the boat, ſix inches below the upper ones, about one inch ſquare. Round ſticks, thin, and about ſix inches diſtant from each other, are tied to theſe frames, and form the ſides. For the top thwarts, very ſtrong ſticks, and nearly as thick as the upper frames, carved to ſit to raiſe the middle of the boat about two inches higher that the ſides. There are thirteen of theſe thwarts or beams: ſeven feet from the ſtern is one of them; twenty inches before the hind frame, a hoop about two inches high is faſtened longer than for the rower to ſit in; this is made ſtrong, and grooved to faſten an open ſkin to, which they tie round their body, and it prevents any water getting into the boat, although it were ſunk. This frame is covered with the ſkin of the ſea lion, drawn and ſewed over it like a cafe. The whole is ſo extremely light, even when ſodden with water, that it may be carried with eaſe in one hand. The head of the boat is double, the lower part ſharp, and the upper part flat, reſembling the open mouth of a fiſh, but contrived thus to keep the head from ſinking too deep into the water; and they tie a ſtick from the one to the other, to prevent its entangling with the ſea weeds. They row with eaſe, in a ſea moderately ſmooth, about ten miles in the hour, and they keep the ſea in a freſh gale of wind. The paddles that they uſe are double, ſeven or eight feet long, and made equally neat with the other articles.

184 Aleutan iſles.

185 Their baidars or boats.

The women of theſe iſlands plait neat ſtraw mats, which ſerve for curtains and beds; they alſo make baſkets, and kindle fires readily by ſtrewing the powder of native ſulphur upon dry graſs or moſs, after which they ſtrike two pieces of quartz one againſt the other over it; the fine particles of ſulphur immediately blaze like a flaſh of lightning, and ſet the whole of the dry graſs or moſs in a flame. The whole natives of the Aleutan iſlands are held in a ſtate of moſt miſerable ſlavery by the Ruſſian hunters, who reſide in this remote quarter of the globe, and compel them to hunt and fiſh in their ſervice. Foxes and martins are almoſt the only animals that the Ruſſian hunters themſelves can kill; for they are not capable of chaſing the ſea animals, which require particular agility in governing the ſmall leather canoes in which the natives purſue the ſea lion, the urſine ſeal, ſea otter, porpoiſes, and common ſeals. The ſea lion, called by the Ruſſians *ſirootſha*, is the ſtrongeſt and largeſt of the ſeal kind; it is covered with dark-coloured coarſe hair, which is very thick and long about the neck and ſhoulders; the hinder part is tapering with ſmooth ſhort hair. The largeſt of theſe animals is about eight feet long; they have a ſmall white ſpot on the temples, which is the only place about them vulnerable by arrows, which hardly pierce the ſkin in other parts; but, if poiſoned, they penetrate deep enough to deſtroy the animal. The fleſh of the ſea lion is cut into thin ſhreds and dried, and is eaten by the Ruſſian hunters. The urſine ſeal has a ſoft downy under fur, reſembling brown ſilk; the largeſt of the ſpecies are about ſix feet long; when very young the fur is of a beautiful ſhort gloſſy black, which changes to ſilvery when they grow up, and, when they become old, it is almoſt white; the moſt valuable fur is that of the ſea otter, called in Ruſſia *morſkoi-bobre*; the largeſt are about five feet long, with a rich fur nearly black, interſperſed with a longer hairs of gloſſy white. From their value the purſuit after them has been ſo eager, that their numbers are declining faſt. Indeed the deſtruction of all

186 Oppreſſion of the Ruſſians.

187 Sea lion.

188 Urſine ſeal.

189 Sea otter.

Aſia.

all kinds of animals that produce valuable kinds of fur nas there, of late, been ſo great, that the trade will probably ſoon be at an end; and this is the only period at which the natives of theſe iſlands, and of the adjoining Aſiatic and American coaſt, can expect a deliverance from the ſtate of ſlavery under which they have been reduced by the Ruſſians. From the Aleutian chain of iſlands the two continents irregularly but rapidly approach towards each other till they come within a diſtance of 40 miles at Bering ſtraits. At this quarter, the part of Aſia that approaches neareſt to America is a peninſula, having the Icy ſea on the north and the Pacific ocean on the ſouth; it is inhabited by a tribe called the *Tſhutſki*, who appear to be the ſame claſs of people that inhabit the oppoſite coaſt of America. The Tſhutſki nation or tribe is divided into two diſtinct branches; the one conſiſts of ſtationary or fixed inhabitants of the coaſt; the other are called *Reindeer* or *Wanderers*. Of the ſtationary part of the tribe the population amounts to about 3000 males; they are induſtrious and neat workmen, as appears from their boats, lances, arrows, bows, apparel, and utenſils, with which they ſupply the wandering part of their tribe; they dig cellars, in which they keep their ſupplies of food and oil. Their proviſions conſiſt of the dried fleſh of ſea animals and deer, of roots and berries. They keep the oil of the ſea animals in ſeal ſkins; they obtain immenſe quantities of it, which they uſe for food, fuel, and light; and alſo, as an article of commerce, with the wandering tribes.

190 Approach of Aſia and America to each other.

191 Tſhutſki.

This wandering tribe conſider themſelves as a very ſuperior and independent race of beings. They call all the nations that ſurround them old women, only fit to be their ſervants. Rein-deer are their only riches. Theſe, and the ſkins of animals that they kill in hunting, they barter with the Ruſſians for kettles, knives, and trinkets; which articles they again exchange with the ſtationary tribe, for arms, dreſſes, &c.

192 Capital of Siberia, Irkutſk.

Of Siberia in general it may be obſerved, that the Ruſſians have fixed their capital in the neighbourhood of the Baikal lake, near the northern front of the high region of Tartary. It is called *Irkutſk*, and is ſituated in 103° 46′ 45″ eaſt of Greenwich, and in N. Lat. 52° 16′ 30″. It contains 1500 houſes, chiefly of wood, twelve ſtone churches, a cathedral, and two monaſteries: beſides which, there are ſeveral public buildings; an hoſpital, a public ſchool, a library, and a theatre. The number of inhabitants is about 20,000. The merchants are numerous and affluent, and a conſiderable trade is carried on with the Chineſe. Here the aſſortments of furs are made which are brought from America and the northern parts of Siberia. There is a glaſs-houſe near the Baikal lake, and a diſtillery, in which 60,000 ankers of ſpirits are made in a year; there are alſo ſalt-works at three ſprings, which ſupply the neighbouring country. The people are extremely hoſpitable to ſtrangers. All kinds of food are cheap, as are ſpirituous liquors, and home-brewed beer; ſilks, cottons, linens, furs, and even Engliſh cloths, are ſold at a moderate price. Many articles of luxury are brought from China, and the country itſelf ſupports immenſe herds of cattle and horſes, and produces all the kinds of European grain; the chief diſadvantage under which it labours is the intenſe ſeverity of a winter which laſts during ſix months of the year. The ſeverity of the winter, and its duration, increaſe in proportion to the diſtance from this moſt ſouthern part of Siberia.

Aſia.

193 River Kovima.

The firſt of the great rivers of Siberia towards the eaſt that runs into the Icy ſea is the Kovima, which takes its riſe in what are called the *Virchoyanſki mountains*, to the weſtward of the moſt northerly part of Kamtſchatka. It flows in a direction nearly north-eaſt about 1800 Ruſſian verſts, each verſt being about three quarters of an Engliſh mile. Different Ruſſian villages are ſituated upon it, or upon the different ſtreams that fall into it. Of theſe it may be obſerved, that the village called *Virchni* is in N. Lat. 65° 28′ 25″, and E. Long. 153° 24′ 30″. Seredni, another village upon the ſame river farther down to the north, is in N. Lat. 67° 10′ 14″. A third village, containing 70 houſes, and a church, called *Neizſhni*, is in N. Lat. 68° 17′ 14″, and E. Long. 163° 17′ 30″.

194 Climate.

To give a correct idea of the climate of theſe latitudes we ſhall ſtate the temperature at Virchni, as obſerved during nine days of the month of November 1786, old ſtile, by Martin Sauer, ſecretary to a Ruſſian expedition, ſent to attempt to navigate the Icy ſea; the obſervations appear to have been made with a ſpirit thermometer of Reaumur.

	Deg.	Wind.
Nov. 22.		
4 A. M.	38½	S. W. light airs.
6 ——	39¼	
8 ——	39¼	
12 M.	38½	
4 P. M.	39	S. S. E.
6 ——	39½	
8 ——	39½	
12 ——	40	
Nov. 23.		
4. A. M.	37½	
6 ——	36	
8 ——	32	
12 M.	32	S. E.
4 P. M.	32¼	
6 ——	32¾	
8 ——	30½	
12 ——	33	
Nov. 24.		
4 A. M.	34	N.
6 ——	35	
8 ——	36	
12 M.	35½	
6 P. M.	35	
12 ——	36	
Nov. 25.		
4 A. M.	34½	S. W. little wind.
2 M.	34¾	N.W. ditto.
4 P. M.	35	
6 ——	36	
8 ——	37	
12 ——	38	
4 A. M.	39½	S. E.
8 ——	40½	
12 M.	40½	
8 P. M.	40½	
12 ——	41¼	
Nov. 27.		
4 A. M.	40½	N. E.
6 ——	40¼	Calm.
8 ——	40	
12 M.	38	
4 P. M.	39	
8 ——	40	
12 ——	40½	
Nov. 28.		
4 A. M.	37¾	E. N. E.
8 ——	33	S. E.
12 M.	32¼	
4 P. M.	31	
6 ——	30½	
8 ——	31½	
9 ——	32½	
12 ——	36¼	
Nov. 29.		
6 A. M.	38¼ to 39	
Nov. 30.		
6 A. M.	35¾	S. S. W. little wind.
8 ——	33	
12 M.	31½	
4 P. M.	31½	
8 ——	32	
12 ——	32	

195 Effects of cold.

On the 22d, at ſix A. M. nine ounces of mercury froze in two hours; the earth, the ice of the river, the timber of the houſes, &c. cracking with reports equal to

Aſia. to thoſe of a muſket. On the ſame evening ten ounces of mercury in a ſtopped vial, froze in two hours and a half. On the 23d, about ten o'clock A. M. the mercury in a ſtopped vial thawed, but in the evening of the ſame day was again quite frozen. On the 26th, in the morning, there was a thick fog, and the earth and the river cracked violently. On the 27th, at nine A. M. a ſealed bottle of Aſtracan brandy (there called *French brandy*) expoſed to the froſt, thickened very much, but was not frozen. On the 28th, at noon, the mercury thawed, but at half paſt ten at night it was obſerved frozen. At 37° it was almoſt impoſſible to fell timber (which was as hard as the hatchet) unleſs it was perfectly dry; and in the greateſt ſeverity of the cold, the hatchets, on ſtriking the wood, broke like glaſs. On coming out of a warm room it was abſolutely neceſſary to breathe through a handkerchief; the body was immediately ſurrounded by a miſt ariſing from the breath, and this miſt conſiſted of very ſmall nodules of hoar ice. Breathing cauſed a noiſe like the tearing of coarſe paper or the breaking of thin twigs, and the expired breath was immediately condenſed into the fine ſubſtance already mentioned. The northern lights were conſtant and very brilliant; they aſſumed an amazing diverſity of ſhapes, and might be heard to ſhoot along.

196 Vegetables growing near the Icy ſea. The vegetable productions of this climate were chiefly the following.

Larch.—This is the chief tree in uſe for building, firing, &c. and the moſt plentiful. It is pretty ſizeable as far as Virchni, and the country is moderately wooded about 200 verſts lower, but the trees very ſtunted; beyond that they are in cluſters on elevated ſpots of ground to about 30 verſts from the Icy ſea, where they ceaſe growing, in about the latitude 68° 30'.

Birch extends to a little below Seredni, but very ſtunted and ſmall trees.

Poplar and aſp grow to a moderate ſize on the iſlands ſheltered by mountains about the ſource of the Kovima, but do not extend ſo low down as Virchni.

Mountain aſh is plenty as far as Virchni, but very ſcarce lower down.

Alder and willow have a trunk about 18 inches in circumference, and grow to the height of two fathom, about Virchni. They gradually diminiſh in ſize, and ceaſe growing with the larch.

Creeping-cedar, bruſhwood, black and red currant, roſe, and juniper, are met with as low as Neizſhni. Bruſhwood and creeping-willows extend to the Icy ſea, but never exceed from ſix to eight inches. The creeping cedar, or *pinus cembra*, produces a conſiderable quantity of ſeeds or nuts in cones, like the common pine; but they ripen only the ſecond year. Immenſe numbers are collected by the inhabitants; ſometimes conſiderable quantities are found in the ſquirrels neſts in hollow trees; in fact they are the chief food of ſquirrels and mice. A very pellucid and ſweet oil is extracted from theſe ſeeds.

Mountain aſh berries are gathered, and uſed to give a pleaſant flavour to their drink.

Black and red currants are collected in abundance, and preſerved in caſks among ice; ſome are boiled and preſerved. The black only extend to about Seredni, but the red continue growing as far as Neizſhni.

Cranberry.—Theſe are ſcarce, and extend no farther north than Seredni, they are always preſerved raw. Aſia.

Brufniki, *baccamanna ſaxatilis*, cloudberry.—These are very plenty as far as Neizſhni, and are preſerved raw.

Colubniki are very numerous: they ſeem to delight in ſuch ſtony places as are overflowed in the ſpring. They are very pleaſant taſted, of a dark blue colour, and grow on a low bath reſembling a myrtle. They are preſerved by boiling.

Moroſhka, *rubus chamæmorus*.—Theſe are the favourite berry of the inhabitants, and grow in damp moſſy places, particularly near lakes. They are reckoned a certain cure for the ſcurvy, and are always preſerved raw.

Siccha, growing on dry ſtony places about the mountains, on a creeping ſpecies of heath, with ſhort needle leaves; they are very ſmall, black, and ſtony, are collected in great abundance, and preſerved by boiling.

Knezhniki, *rubus arcticus*, are scarce, growing about the roots of the alder and currant bushes. 197

The following animals are found in the neighbourhood of the river Kovima, and are hunted for food or on account of the value of their ſkins. Animals.

Names.	*Price of the Skins.*
Elk,	2 rubles.
Deer,	1 do.
Bear,	1 do.
White bear,	1 do.
Glutton,	2 to 10 do.
Wolf,	2 to 8 do.
Fox,	1 to 5 do.
Stone fox,	50 copeeks.
Ermine,	5 do.
Lynx,	3 to 10 rubles, according to the length of the hair.
Otter,	8 to 10 rubles.
Sable,	10 do.
Sheep, argali,	1 do.
Hare,	3 to 5 copeeks.
Marmot,	5 to 10 do.
Squirrel,	3 to 5 do.

Moſt of the kinds of birds known in the northern parts of Great Britain are alſo found in Siberia at ſome period of the year. At Neizhni the ſwallows were obſerved ſwarming together under the eaves of the church, chirping very much, particularly on the 2d of Auguſt old ſtile, which is ſtill uſed in Ruſſia; and on the 3d there was not one to be found, nor had anybody ſeen them depart. They appear about the 21ſt of May, and depart between the 2d and 6th of Auguſt, never ſtaying beyond the latter date. The red breaſt remains a day or two longer than the white. The ſnow bunting, the firſt bird that appears, is ſeen about the middle of March, feeding on the ſeeds of graſs on the ſandy ſhores of the river, and about the roots of buſhes where the ſnow is earlieſt melted by the ſun. Different flights follow after each other for about a month; eagles follow cloſe upon them. Swans, geeſe, and ducks arrive towards the end of April, and continue about the neighbouring lakes and rivers till the beginning of September. The river Kovima is frozen over about the 20th of September, and opens about the 24th of May, when it deluges the low country. At Neizhni, on the 25th of November, the ſun

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goes down, and does not riſe again till the 1ſt of January, when it appears above the horizon, and this is the time of the greateſt cold.

199 Coaſt of the Icy ſea deſcribed.

The coaſt of the Icy ſea is moderately high, formed by projecting promontories and ſhallow bays expoſed to every wind except the ſouth. The mountains are covered in different places with ſnow, which melting, produces ſmall torrents that ruſh into the ſea. The mountains are compoſed of granite, quartz, and a hard black ſtone; they produce moſs, a kind of vetch the root of which is edible, creeping willow, and birch, not exceeding ten inches in height. Near the mouths of the large rivers the ſhores are covered with drift-wood, and in every place remains of huts left by different hunters are ſeen. Upon the ſhore rein-deer are found pretty numerous; bears, but not white; wolves, foxes, ſtone fox, wild ſheep, and the whiſtling marmot; the gulls, ravens, hawks, black-headed buntings, ſnow-larks, a few partridges, geeſe, ducks, and divers. The productions of the ſea itſelf are very few; ſome ſeals, herrings, whales, and a ſmall ſpecies of ſalmon, but no traces of ſhell-fiſh of any kind are to be met with. The atmoſphere is always cold and chilly, though the thermometer in the middle of July rites 14° and 16° above the freezing point of Reaumur. The fogs upon this ſea are very remarkable, continually hovering above the ice at no great height; ſometimes having the ſame appearance with iſlands when ſeen in a haze, and reſembling vaſt columns of ſmoke. Neither ebb nor flow of the tide is perceived, and the ice is always brackiſh to the taſte.

200 Attempt to explore the Icy ſea.

This ocean never has been, and, in all probability, never can be fully explored; various attempts, however, have been made by individuals, as hunters, in ſearch of places in which abundance of game may be found, or in ſearch of what are called the *mammoths tuſks*: theſe are the tuſks of a ſpecies of animal that is now unknown and extinct; but which muſt once have exiſted in immenſe multitudes in Siberia. Theſe tuſks are found in great numbers buried under the high ſandy ſhores of rivers at a conſiderable depth; the ſpring floods bring them to view by waſhing away the ſand that covers them, and they appear to have been originally buried by ſimilar floods; they are equal to elephants teeth in whiteneſs, beauty, and value, but very different in their ſhape, being all bent ſpirally: the

201 Mammoths tuſks.

Sauer's Expedition

largeſt are found on the ſhores of the Icy ſea; one is mentioned, which in direct length extended to four feet one inch French meaſure; when meaſured along the bending, it was eight feet ſeven inches and four lines in length; its circumference near the root was 14 inches and 3 lines; the thickeſt part, which was at 22 inches from the root, was 17 inches and 8 lines; the weight of the whole was 115 lb. avoirdupois. The outſide was very brown from its having been expoſed to the weather, and it was cracked through the coat or upper ſtratum about an inch; the inſide was firm and very white.

In ſearch of this valuable kind of ivory, which forms an important branch of Siberian commerce, individuals have attempted to penetrate into the Icy ſea in the hope of diſcovering untouched ſtores upon new iſlands, or ſome unexplored continent. With this view one Lachoff made an expedition from the river Yana, with ſome attendants, in the year 1770, and the following years. Of this expedition Mr Sauer obtained the following account from Zatai Protodiokanoff, a burgher of a Siberian town called *Yakutſk*, in N. Lat. 62° 1′ 50″, E. Long. 129° 34′. The account is chiefly of importance on account of the ſavage nature of the unknown region to which it refers, and the extraordinary circumſtance of the bones of animals, particularly the rhinoceros, being found in it, which in our times can only inhabit the warmeſt latitudes. "Protodiokanoff accompanied Lachoff in 1770, from his winter-buildings at the eſtuary of the Yana, in the month of March, to Swatoi Noſs, the northern promontory of a bay which receives this river.

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202 Expedition by Ruſſian hunters.

"They ſaw an immenſe herd of deer going to the ſouth, and obſerved that their traces were from the north acroſs the Icy ſea. Lachoff reſolved, if poſſible, to find out whence they came; and in the beginning of April, ſet out very early in the morning, with his ſledge drawn by dogs. Towards evening he arrived at an iſland 70 verſts from the promontory, in a due north direction, where he paſſed the night, and the next day proceeded farther, the traces of the deer ſerving as a guide. About noon he arrived at a ſecond iſland 20 verſts diſtant, and in the ſame direction. The traces coming ſtill farther from the north he continued his route. At a ſmall diſtance from the ſecond iſland he found the ice ſo rugged and mountainous as to prevent his proceeding with dogs. He obſerved no land; and therefore, after paſſing the night on the ice, he returned, and with great difficulty, for want of proviſions for his dogs, regained Swatoi Noſs. He repreſented his diſcovery to the chancery of Yakutſk, and the intelligence was forwarded to St Peterſburg. The empreſs Catharine II. called the iſlands by the name of the diſcoverer, and gave him the excluſive right of collecting ivory, and hunting animals in this place, and in any other that he might thereafter diſcover.

"In 1773 he went with five workmen in a boat to the iſlands, and continued acroſs ſtraits, where he found the ſea very ſalt, and a current ſetting to the weſt. He ſoon ſaw land to the north, the weather being pretty clear, and arrived on what he called the *third iſland*. The ſhore was covered with drift wood. The land was very mountainous, and ſeemingly of great extent; but no wood was ſeen growing, nor did he obſerve the traces of any human being. He found ſome tuſks of the mammoth, ſaw the tracks of animals, and returned (without making any other diſcovery) to the firſt iſland, where Lachoff built a hut of the drift-wood, and paſſed the winter. One of his companions left a kettle and a palma on the third iſland.

"This was reckoned a diſcovery of ſome importance, and the land-ſurveyor Chvoinoff received orders from the chancery of Yakutſk, to accompany Lachoff to this fartheſt iſland, and take an exact ſurvey of the ſame. In 1775, on the 9th February, he left Yakutſk, and arrived on the 26th March at Uſt Yanſk Lemovia, or winter huts at the eſtuary of the Yana. He immediately proceeded acroſs the bay to Swatoi Noſs, which is 400 verſts from the diſcharge of the river in a direction north-north-eaſt. On the 6th May he arrived at the firſt iſland, which is 150 verſts long and 80 verſts broad in the wideſt parts, and 20 verſts in the narroweſt. In the middle is a lake of conſiderable extent, but very ſhallow, but the borders of which are deep.

The

Aſia. The whole iſland, except three or four inconſiderable rocky mountains, is compoſed of ice and ſand; and, as the ſhores fall, from the heat of the ſun's thawing them, the tuſks and bones of the mammoth are found in great abundance. To uſe Chvoinoff's own expreſſion, the iſland is formed of the bones of this extraordinary animal, mixed with the horns and heads of the buffalo, or ſomething like it, and ſome horns of the rhinoceros; now and then, but very rarely, they find a thin bone, very ſtraight, of conſiderable length, and formed like a ſcrew.

"The ſecond iſland is 20 verſts diſtant from this, low, and without drift-wood; 50 verſts in length, and from 20 to 30 verſts broad. Here alſo the tuſks and other bones are found; and great numbers of the arctic foxes are to be met with on both. The ſurface is a bed of moſs of conſiderable thickneſs, producing a few low plants and flowers, ſuch as grow about the borders of the Icy ſea. This moſs may be ſtripped off as you would take a carpet from a floor, and the earth underneath appears like clear ice and never thaws; theſe ſpots are called *kalkuſne*.

"The ſtraits to the third iſland are 100 verſts acroſs. He travelled along the ſhore, and on the 21ſt May diſcovered a conſiderable river, near which he found the kettle, palma, and ſome cut wood, in the ſame place and ſituation, as they had been left by Lachoff's companions three years before Chvoinoff's arrival. This river he called *Izarevaia Reka*, in conſequence of having diſcovered it on the 21ſt of May. The ſhore was covered with drift-wood, all of it extremely ſhattered. Aſcending to the top of a very lofty mountain, he ſaw a mountainous land as far as his eye could trace in clear weather, extending eaſt, weſt, and north. Continuing his route along the coaſt 100 verſts, he obſerved three rivers, each of which brought down a great quantity of wood, and abounded in fiſh; and here the nerk, a ſpecies of ſalmon frequenting Ochotſk and Kamtſchatka, was in abundance, the oſh not found in the Kovima or Indigirka. On this land he paſſed the ſummer, and returned in the autumn to Swatoi Noſs.

"I aſked, whether he obſerved any regular ebb or flow of the tide? He ſaid, 'that he did not obſerve any remarkable alteration:' Whether he recollected how the current ſet? 'He believed to the weſt:' Whether the water was ſalt? 'Yes, and very bitter.' He further obſerved, that there were whales and belluga, white bears, wolves, and rein-deer. No growing wood was to be ſeen, and the mountains were bare ſtone. None of theſe travellers took any notice of the depth of the water, nor were they acquainted with the nature of tides."

203 Opinions of philoſophers about the Icy ſea. We account it worth while to take notice of theſe facts; partly, becauſe no circumſtance that can tend to elucidate the general ſtructure of this globe, or point out its different productions, ought to be regarded as unimportant; and partly, becauſe ſome philoſophers have attempted, from the remains of animals which appear to have once inhabited the dreary regions within the polar circle, to infer that theſe countries muſt once have poſſeſſed a better climate, more favourable to animal life, which muſt have been altered by ſome extraordinary change in the aſtronomical poſition, or in the general temperature of the earth.

Beſides the rivers we have already noticed, Siberia contains many others; the chief of which run from the northern limit of the high regions of Tartary, and receive the reſt as tributary ſtreams in their paſſage to the Icy ſea; the principal are the Lena, the Jenſea, and the Oby. The deſcription of them all is ſimilar. They flow through a country containing a very thin population, but which is as varied in its ſurface and in its mineral productions as any other part of the world: We ſhall here take notice of the Lena only, as a deſcription of it will afford a full idea of the reſt. Aſia.

About a hundred miles weſt-ſouth-weſt of a ſmall Ruſſian village called *Katſhaga Priſtan*, the Lena takes its riſe from an inconſiderable lake among the mountains of Altai, near the Baikal lake. It flows in a gentle and uninterrupted ſtream, though here and there impeded by ſhallows at a late ſeaſon, to about the diſtance of 300 miles from its ſource; when it decreaſes conſiderably. The direction is very winding, but pretty uniformly eaſt-north-eaſt to Yakutſk, and nearly north from thence to its diſcharge into the Icy ſea, about the latitude 71° 30′ and longitude 127° eaſt of Greenwich, after a courſe of 3450 geographical miles. The appearance that it aſſumes is continually varying. In ſome places, mountains bound the channel on both ſides, clothed to the ſummits with ſtately pines; in others they are barren, projecting into the river, and turning its courſe, taking fantaſtic ſhapes, reſembling ruins of large buildings, towers, and churches; the chaſms overgrown with hawthorn, currant buſhes, dog roſes, &c. In ſome places the mountains retreat inland for miles, forming a back ground to extenſive plains, and expoſing a miſerably built town, ſurrounded with corn fields, gardens, and paſture grounds, with a few herds of cattle grazing: Theſe openings are frequent, at unequal diſtances of five to forty verſts from each other, and are always occupied by villages as far as Olekma, 1800 verſts from Katſhuga. All beyond is deſolate, except a few huts inhabited by convicts who have the charge of horſes for the poſts, and the towns of Petroſtſky, Yakutſk, and Giganſk. The beſt of them is only a collection of huts inhabited by prieſts and their attendants, officers, and Coſſacks, who teach obedience, and enforce the payment of tribute from the wandering tribes of Tartars that infeſt the neighbourhood. The following are the rivers that flow into the Lena.—The Ilga, 172 verſts from Katſhuga. The Koot, 469 verſts from the ſame place. Very near the eſtuary of this river is a ſalt lake, which is very ſhallow, and works, the property of the priest [illegible] vink of the diſtrict, at which one boiling produces 1080 pounds weight of ſalt. Matakeſka, 891 verſts from Katſhuga. Makarova, 690. Kiringa, 778. Vitima, 1178. This laſt river flows from a lake called the Baikal. It is nearly equal to the Lena in width, depth, and extent; and is famous for ſables, lynx, fox, ermine, ſquirrel, and deer. The ſables of this river and of the Momo, which falls into it 300 verſts from the diſcharge, are very valuable, and of a ſuperior quality. Numbers of Tungooſe travel about here on the chaſe. Three verſts up this river are the mountains that produce talc. Specimens have been formerly found, 28 inches ſquare, and tranſparent as glaſs: What is now found is very ſmall, but perfectly pellucid. 206 Rivers [illegible] into the Lena.

Aſia. end. All the windows of theſe parts are glazed with it. The river Pellidui, 1202 verſts from Katſhuga; alſo famous for the above mentioned animals, and the laſt place that produces corn. Sparrows and magpies are not ſeen farther north: they only came here about the year 1780, after the ground had begun to be cultivated. The Nuye, 1475 verſts from Katſhuga. The Yerba, 1505. The Patama, 1575. The Ounaghtali, 1595. The Olekma, 1822. The Aldan, 2000. Beſides ſeveral rivers farther north of no material conſequence.

207 Siberian tribes. The moſt remarkable of the native tribes of Siberia are the Tungooſe, the Yakuti, and the Burati; all of whom appear to have originally deſcended thither from the ſouthern and more elevated regions of Tartary. To theſe may be added the Coſſacks, whom the Ruſſians have everywhere introduced.

208 Tribe of Tungooſe. The Tungooſe wander over an amazing extent of ground, from the mouth of the Amour to the Baikal lake, the rivers Angara or Tungooſka, Lena, Aldan, Yudoma, Mayo, Ud, the ſea coaſt of Ochotſk, the Amicon, Kovima, Indigirka, Alaſey, the coaſt of the Icy ſea, and all the mountains of theſe parts, conſtantly on the look-out for animals of the chaſe. They ſeldom reſide more than ſix days in one place, but remove their tents, though it be to the ſmall diſtance of 20 fathoms; and this only in the fiſhing ſeaſon, and during the time of collecting berries. They leave their ſupplies of dried fiſh and berries in large boxes, built on trees or poles, for the benefit of themſelves and their tribes in travelling during the winter. Berries they dry by mixing them with the undigeſted food (*lichen*) out of the ſtomach of the rein-deer, making thin cakes, which they ſpread on the bark of trees, and dry upon their huts in the ſun or wind. They ſeem callous to the effects of heat or cold: their tents are covered with ſhamoy, or the inner bark of the birch, which they render as pliable as leather, by rolling it up, and keeping it for ſome time in the ſteam of boiling water and ſmoke. Their winter dreſs is the ſkin of the deer, or of the wild ſheep, dreſſed with the hair on; a breaſt-piece of the ſame, which ties round the neck, and reaches down to the waiſt, widening towards the bottom, and neatly ornamented with embroidery and beads; pantaloons of the ſome materials, which alſo furniſh them with ſhort ſtockings, and boots of the legs of rein-deer, with the hair outward; a fur cap and gloves. Their ſummer dreſs only differs in being ſimple leather without the hair.

209 Cuſtoms of the Tungooſe. They commonly hunt with the bow and arrow; but ſome have rifle-barreled guns. They do not like to bury their dead, but place the body, dreſſed in its beſt apparel, in a ſtrong box, and ſuſpend it between two trees. The implements of the chaſe belonging to the deceaſed are buried under the box. Except a ſorcerer is very near, no ceremony is obſerved; but in his preſence they kill a deer, offer a part to the demons, and eat the reſt. They allow polygamy; but the firſt wife is the chief, and is attended by the reſt. The ceremony of marriage is a ſimple purchaſe of a girl from her father; from 20 to 100 deer are given, or the bridegroom works a ſtated time for the benefit of the bride's father. The unmarried are not remarkable for chaſtity. A man will give his daughter for a time to any friend or traveller that he takes a liking to; if he has no daughter he will give his ſervant, but not his wives. They are rather below the middle ſize, Aſia. and extremely active; have lively ſmiling countenances, with ſmall eyes; and both ſexes are great lovers of brandy. They declare that they know no greater curſe than to live in one place, like a Ruſſian or Yakut, where filth accumulates, and fills the habitation with ſtench and diſeaſe.

210 Yakuti. The Yakuti, or Socha, are a Tartar tribe that originally deſcended into the country of Siberia from the high regions on the ſouth. A nation of Mongals inhabiting a part of the country near China alſo call themſelves *Socha*, and ſpeak the ſame language as the Yakuti. The Ruſſians diſcovered them in 1620: they were divided into many tribes, and the diſſentions that exiſted among them contributed to their being ſubdued. Their number is computed at 50,000 males; but the population is declining. They complain of the oppreſſion of the Ruſſian government, and of late, as already mentioned, many of them have emigrated to the river Amoor, to enjoy the advantages ariſing from the protection of the milder and more popular government of the Chineſe.

211 Their perſons. There is perhaps no nation in the world that can exhibit a greater variety with regard to ſize than the Yakuti. The affluent, whoſe dwellings are ſituated about the meadows on the ſouth ſide of the Virchoyanſki chain, are from five feet ten inches to ſix feet four inches high, well proportioned, extremely ſtrong, and very active; while the indigent inhabitants of the more northerly parts are in general below the middle ſize, indolent, and of an unhealthy complexion; evidently ſtunted by the badneſs of their food, the ſeverity of the climate, and the want of proper clothing. Their wealth conſiſts of horſes and horned cattle. The private property of no individual at preſent exceeds 2000, all ſpecies included; formerly, numbers of them poſſeſſed 20,000.

212 Means of ſubſiſtence. With regard to their capacity of ſupporting themſelves, they are independent. Their only neceſſaries are, a knife, hatchet (or palma), flint and ſteel, and a kettle; and with theſe articles the all-providing hand of God ſufficiently ſupplies them, and capacitates them to furniſh the other tribes. From the iron ore of the Vilui they make their own knives, hatchets, &c. and of ſuch temperature as baffles the more enlightened art of the Ruſſians. This ore may be called native iron, from the little trouble they have in preparing it. Every utenſil and article of dreſs they make themſelves.

213 Religion of the Yakuti. Tanghra is with them the general name of god, or perhaps of the ſupreme God; but they have other deities, whoſe names are in their language deſcriptive of their attributes. One of theſe is ſtyled *Aar-toyon*, (or the merciful chief.) To him they aſcribe the creation, and ſuppoſe that he has a wife, whom they call *Kubey Chatoon*, (ſhining in glory). They are both almighty. Another god, called *Wechſyt*, (the advocate), carries up their prayers, and executes the will of the godhead. He ſometimes appears among them, aſſuming the form of a white ſtallion, or of any bird, from the eagle to the cuckoo. It is he that intercedes for them, and procures all deſirable things. The wife of Wechſyt, is called *Akſyt*, (the giver). Theſe are their benevolent gods, together with a being whom they adore in the ſun. They regard the fire, as containing a peculiar being poſſeſſed both of good and evil qualities,

Asia. ties, and to whom they conſtantly offer ſacrifices. Their malevolent aerial ſpirits are very numerous; they have no leſs than 27 tribes or companies of them. Their chief they call *Ooloo Toyon*: he has a wife and many children. Sugai Toyon, the god of thunder, is his miniſter of immediate vengeance. (Sugai ſignifies a hatchet). The reſt they diſtinguiſh by the names of different colours. Cattle and horſes are ſacred to the different ſpirits whoſe colours they bear. They reckon eight tribes of ſpirits inhabiting Mung Taar (everlaſting miſery). Their chief is called *Aſhary Baabo* (the mighty). They have wives, and the cattle ſacred to them are quite black: Their departed ſhamans, or magicians, are ſuppoſed to unite to theſe. They dread greatly an evil goddeſs, whom they call *Enachſys*, (cowherdeſs). She damages the cows, inflicts diſorders on them, deſtroys calves, &c. She is frequently honoured with proſtitutory ſacrifices.

Their magicians, or ſhamans, are chiefly men, though a few of them are women. Young neophytes are inſtructed by an old profeſſor of the art, who conducts them to the moſt ſolitary places of the woods; ſhews them the favourite ſpots of the ſpirits of the air and of the pit, and teaches them to invoke their power and prevail with them to appear. The magicians have a peculiar dreſs, conſiſting of a leather jacket, and an apron reaching from the chin to the knees. The whole is ornamented all over with iron plates, and pieces of iron and braſs, hanging, which make a diſmal noiſe when they agitate their bodies, during the fantaſtic but childiſh ceremonies which they perform while driving, as they ſay, the demons out of ſick people. They uſe a tumbour in their ceremony, and are the prieſts and phyſicians in the tribe.

214 Food. In their roving parties, on the chaſe or travelling, they only take with them a ſcanty ſupply of koumiſs, depending on chance for the reſt; and ſhould their purſuits prove unfortunate, they find their food in the inner bark of the pines and birch-trees, or the different edible roots. Squirrels are in their eſtimation very good eating, but their favourite food is the whiſtling marmot. Of all their proviſions, however, koumiſs is the moſt valued; it is formed of mare's milk, collected in large leather buckets, wide at bottom, and narrow at the top: each containing about an anker. Into this is a ſmall piece of the ſtomach of a calf or colt is thrown, and ſome water mixed with it: it is agitated till it ferments, and acquires an agreeable acidity; and when taken in great quantities it has an intoxicating quality (See KOUMISS). Of this drink every one collects as much as he can; and ſome of the chiefs obtain more than 500 ankers of it. A day is then fixed upon by each chief to conſecrate his ſtock, which is performed as follows:—A ſummer hut is built of thin poles, of a conical form, covered with the inner bark of birch, on ſome extenſive meadow. It is ornamented, inſide and out, with branches of the birch-tree, and a hearth is made in the centre. Relations and acquaintances are invited to the banquet; but all gueſts are welcome, of every nation, indiſcriminately. The magicians, or ſhamans, take the head ſeats; others are ſeated according to the eſtimation of their ſeniority. When the hut is full, the elder ſhaman riſes, and commands one of the Socha that he knows to be qualified (namely, that has not ſeen a corpſe within the month, and that never has been accuſed of theft, or bearing falſe witneſs againſt any man, which curſes them for ever, and renders them unfit for the ſacred and ſolemn taſk), to take a large goblet, called a *tſoroon*, which is uſed to drink out of on ſolemn occaſions, and fill it with koumiſs out of the firſt tymir, then to place himſelf before the hearth, with his face to the eaſt, holding the tſhoron to his breaſt with both hands. He then pours kouniſs three times on the hot embers, as an offering to Aar Toyon. Turning a very little to the right, he pours three times to Kubey Chatoon; then, to the ſouth, he offers in the ſame manner to each of the benevolent gods. With his face to the weſt, he pours three times to the 27 tribes of aerial ſpirits, and three times to the north to the eight tribes of the pit, and to the manes of their departed ſorcerers. After a ſhort pauſe, he concludes his libation by an offering to Enachſys, the cowherdeſs. The ſorcerer then turns the man with his face to the eaſt, and commences a prayer aloud, thanking the godhead for all favours received, and ſoliciting a continuance of their bounty. On concluding his prayer, he takes off his cap, with which he fans himſelf three times, and cries out aloud, "Oooii" (grant), which is repeated by all preſent. The elder ſhaman, then, taking the tſhoron, drinks a little, and hands it to his brethren of the ſame order, from whom it paſſes to the company as they ſit, except ſuch as are defiled. Women are not admitted into the hut; nor are they or the diſqualified allowed any of the koumiſs out of the firſt ſymir, which they call ſanctified, as poſſeſſing the power of purifying and ſtrengthening in a divine ſenſe. They all now go out of the hut, and ſeat themſelves on the ſtrewed branches of birches, in half circles, fronting the eaſt. All the ſymirs are carried, and placed between the branches of trees ſtuck in the earth, and they commence drinking; every creſcent having their ſymirs, tſhoron, and preſiding ſhaman who fills the goblet, and puſhes it about with the courſe of the ſun. The quantity that they drink is incredible. Tournaments now begin; wreſtling, running, leaping, &c.; and if any one carry off the prize in all the achievements, he is eſteemed as particularly favoured by the deities, and receives more reſpect and credit in his teſtimony than falls to the lot of a common man. When the ceremony is finiſhed, they mount their horſes, forming half circles, drinking a parting draught, and wheeling round with the ſun's courſe, ride home. Women attend, and form parties among themſelves at ſome diſtance from the men, where they drink, dance, &c.

215 Conſecration of koumiſs.

216 Character. The Yakuti or Socha, in their intercourſe with each other, have few atrocious vices. Robberies are ſeldom committed; they ſometimes, indeed, loſe their cattle from their ſtraying in theſe wide countries. If ſtolen, detection is almoſt certain, as they relate all their loſſes at every public meeting; in conſequence of which, if the loſt beaſt has been ſeen, information is given, and it is traced. A thief is not only compelled to make reſtoration, but to make good all the loſſes of other Yakut during the year, whether he has ſtolen the property or not. If one is accuſed of having ſtolen cattle, and eaten or killed them, he muſt either pay for them, receive a flogging, which is very diſgraceful, or take an oath of his innocence, which is adminiſtered with ſo many ſuperſtitious ſolemnities, that innocent perſons will

Asia. will often rather pay the damages than take the oath. They are very revengeful of infults, and entail upon their progeny the duty of revenge: their gratitude, however, is equal to their refentment; they never forget a benefit; and not only make a return, but recommend to their children to perfevere in friendfhip and gratitude to the benefactors of their parents. They are very obedient to their chiefs and old men. They deliberate in council on all matters of public concern, as the courfe which each is to take in the chafe, &c. The old men are furrounded by the reft, and their advice is implicitly obeyed. A young man gives his opinion refpectfully and cautioufly; and, even when afked, he fubmits his ideas to the judgment of the old. They are extremely hofpitable and attentive to travellers, and are very inquifitive; they afk queftions frequently, but, at the fame time, they anfwer them without embarraffment, and with a confiderable appearance of intelligence. They are a vigorous race, accuftomed to travel in the fevereft frofts, and to endure hunger with patience. They are, however, fubject to fome difeafes, particularly rheumatifms, weaknefs of the eyes, boils, and the itch. The fmallpox and meafles have alfo at times proved very deftructive amongft them.

217 Superftitions. They have a multitude of petty fuperftitions, independent of their religion. Ravens, crows, and cuckoos, are ominous birds: and, if thefe perch near their huts, they dread fome misfortune, which can only be averted by fhooting the birds. On the contrary, eagles and large birds of prey are the foreboders of good; and almoft every tribe has its object of veneration, but not of worfhip, as the eagle, the fwan, the ftallion, &c. They always take care to make the doors of their huts towards the eaft; the fire-place is in the middle, with the back of the chimney towards the door; the fides of the hut are furnifhed with benches and fmall cabins, which ferve for fleeping places, and for fitting on. The men keep upon the fouth fide and the women upon the north. Except the hoftefs, no woman may prefent food to a male ftranger in front of the fire-place, but muft walk round the chimney to prefent it. They never wafh the veffels that contain their food; but, when a difh is emptied, they clean it as well as they can with their fingers, accounting it ominous, or that it forebodes a fcarcity, to wafh away any part of their food. Their earthen veffels are preferved extremely clean by repeated burnings, as the fire confumes what adhered to the fides. Before eating any thing, they caft a morfel into the fire. Every Yakut has two names, and is only called by the right name, in cafes of neceffity, to avoid the fearch of evil fpirits. They never mention the dead, unlefs allegorically, and forfake the hut in which any one has expired.

218 Women and marriage. Polygamy is allowed among them, and fome have fix wives, but the firft is refpected by all the reft, and they dwell in feparate huts: their marriage ceremonies are extremely formal. A young man, who wifhes to marry, fends his friend to afk the confent of the bride's father, and what kalym (purchafe) he demands; that is, how many horfes and cattle, as alfo the quantity of raw meat, horfe flefh, and beef, that he requires for treats and feafts; this they call *Turim*; half of the quantity is always given in prefents to the bridegroom by the bride's father, and is called *yraj*. The daughter's inclinations are always confulted; and, if fhe does not object, the kalym and kurim are ftipulated. The bridegroom kills two fat mares, dreffes the heads whole, and the flefh in pieces, and goes with three or four friends to the father of the bride. On his arrival at the hut, one of his friends enters, and places one of the dreffed horfe's heads before the fire, and returns to his companions without fpeaking a word. They then all enter the hut; and a forcerer being placed oppofite the fire, the bridegroom kneels on one knee with his face towards it, into which butter is thrown; he then lifts up his cap a little, and nods his head three times without bowing his body. The forcerer pronounces him the happy man, and prophefies a fucceffion of happy years, &c. Then the bridegroom rifes, bows to the father and mother, and takes his feat oppofite the bride's place, but keeps filent. The meat is then brought in, and the father of the bride diftributes it among his own friends, but kills a fat mare to treat his new gueffs. Supper being over, the bridegroom goes to bed; the bride, who has not been prefent, is conducted into the hut, and to his bed, by fome old women, and they fleep together; fometimes, however, the bride does not appear at the firft vifit. In the morning the friends return home, but the bridegroom remains three or four days. A time is now fixed for payment of the kalym, either at the new or full moon. The kalym and kurim are then carried without any ceremony, and delivered in the prefence of many friends, who are feafted, and the bridegroom remains again three or four days, and fixes a time to receive the bride at his own dwelling, which muft be new built on purpofe; and this alfo at the new or full moon. All her relations, male and females, with friends and neighbours, fometimes more than a hundred, accompany the bride with her father and mother, taking with them eight or ten fymirs full of melted butter, and the dreffed meat of three mares. They go to the new hut prepared for them; three men are fent to the bridegroom in his old hut, and the greateft drinkers are chofen for this purpofe. On entering, the firft fays, "we are come to fee your dwelling, and to fix poffs before your door." They then kneel on one knee before the fire: an ayack is filled with koumifs, and handed by two men to the three kneeling; each of whom empties an ayack at three draughts. They then rife and go out, all the company faluting them with one cheer. Three others enter; the firft with nine fables, the fecond with nine foxes, and the third with twenty-feven ermine fkins; thefe they hang on a peg in the chief corner of the hut, and retire. Then a number of women conduct the bride, her face being covered with ermine fkins, to the hut; the entrance has a wooden bar placed acrofs it, but of no ftrength, which the bride breaks with her breaft, and enters the hut. She is placed before the fire, holding her hands open before her, into which feven pieces of flicks are put; as alfo feveral pieces of butter, which fhe throws into the fire. The fhaman pronounces a bleffing; fhe then rifes and is again conducted, with her face concealed all the while, to the new hut, where the cover is taken from her face. The bridegroom enters, and feafts his gueffs two days; then prefents all his relations with cattle, over and above the kalym; which is, however, returned on paying their formal vifits, perhaps a year or more afterwards.

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afterwards. When a child is about to be born, the husband is called, and two ſkilful women, in his preſence, aſſiſt the delivery. If a ſon be born, a fat mare is killed on the third day; all the neighbours are invited to ſupper; the child is rubbed all over with fat, and a name given to it, the more inſignificant the better; for an elegant name would only entice the demons to be continually about it. No ceremony is obſerved if the child be a daughter.

219 Funerals.

The Yakuti bury a dead perſon in his beſt apparel, with his knife, flint, ſteel, tinder, and ſome meat, that he may not hunger on the road to the dwelling of ſouls. Two holes are dug under a tree; a favourite horſe of the deceaſed is killed and buried in one, while the corpſe is laid in the other: a fat mare is killed, dreſſed, and eaten, by the gueſts; her ſkin is ſuſpended on the tree, under which the body lies with the head to the weſt. A magician, playing upon his tambour, invokes the demons to let the ſpirit of the departed reſt in peace; and the ceremony is finiſhed by filling up the grave. If an elder brother die, his wives become the property of the younger; but the wives of a younger brother become free at his death.

220 Arts.

Their dreſs is ſimilar to that of the Tungooſe, but more complete. Their principal arts conſiſt of working iron ore, as already mentioned, by means of charcoal, rendering it malleable without any previous proceſs of fuſion, and of dreſſing leather, which they are ſaid to perform with wonderful ſucceſs, ſo as to render it completely water-proof, in the following manner: For ſymirs or buckets, they take a freſh ſkinned cow's or horſe's hide, and ſteep it in water a few days, when the hair eaſily rubs off. It is then hung up till nearly dry, when they lay it in blood until ſoaked through, and then hang it in a ſmoky place for a conſiderable time; of this they make their buckets and ſoles of boots, &c. The latter are completely water-proof, and the buckets or ſymirs even retain oil. The legs of boots they make of colts or calves ſkins, ſcraped and rubbed till they be ſoft, then ſewed, ſteeped in blood, and dried in ſmoke; afterwards blackened with wood coals, and fat, ſeveral times, and ſmoked again: they are then water-proof. The thread with which they ſew their clothes is made of the ſinews from the legs of the horſe-deer or elk. They are expert archers, and have a plentiful ſupply of arrows in their quivers. They make conſiderable quantities of hay, and collect berries which they preſerve by boiling. To ſave their hay, they kill at the beginning of winter the cattle they intend to uſe for food, and let it freeze, which preſerves it freſh and good during the whole of that ſeaſon.

221 Tribe of Burati.

Another tribe of Siberians inhabiting the ſouthern parts of the territory, is the Burati. They are divided into a great number of ſeparate ſmall tribes, and are alſo a race of Tartars. They poſſeſs immenſe herds of cattle and horſes. They are not unacquainted with letters, and have lamas or prieſts, like the inhabitants of the ſouthern parts of High Tartary. There are alſo various other tribes, ſuch as the Yukagiri, the Tſhuvantſi, Chatinſy, &c. who do not ſeem to differ in their manners and character from thoſe already deſcribed. On the whole, however, it appears that the

222 Population of Siberia.

population of Siberia is very trifling. It is greateſt towards the ſouthern boundaries, in the latitudes of the Baikal Lake and the river Amoor, where the climate is mildeſt. To give an idea of the population of the lower or northern part, we ſhall here ſet, from the work already quoted, an account of the number of inhabitants from the latitude of 64°, to the extremity of the north coaſt, and from the river Kovima eaſtward to the Anabara. "The district of Lathinsk comprehends the rivers Kovima, Alaſey, Indigirka, and Yana, and thoſe that flow into them: The tributary nations are

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Yakuti - -	2810
Lamut and Tungooſe -	742
Yukagiri - -	322
Tſhuvantſi and Chatinſy -	37
	3911

Tribute received 1788, amounts to 4566 rubles.

"The circuit is about 6000 verſts in circumference. The diſtrict of Giganſk, a town north of Yakutſk, on the Lena, contains one church, two government houſes, ſeven private ones, and 15 huts. It has a mayor (*gorodnitſhik*) and his chancery, and court of the diſtrict (*himhoi ſud*) and a merchantry, although the merchants are mere trading pedlars, and only two I think in number. Its circuit alſo is about 6000 verſts from the Yana to the Anabara, which divides the governments of Tobolſk and Irkutſk. The tributary nations are

Yakuti - -	1449
Tungooſe - -	479
	1928

Tribute received in 1798, 56 ſables, 262 foxes, and 1196 rubles in money.

"The Ruſſians inhabiting both diſtricts, including exiles, &c. do not exceed 750 males."

223 Ruſſians in Siberia.

The Ruſſian inhabitants of the better parts of Siberia, eſpecially towards the weſt, employ themſelves in the cultivation of grain, or as graziers or carriers. They have an excellent breed of horned cattle, with which, as well as with butter, they ſupply both the northern and eaſtern diſtricts of the empire. They are wealthy, hoſpitable, healthy, and clean, and live under no controul of individuals, only paying a trifling ſum to the captain of the diſtrict for government. The Siberians throughout are more induſtrious and independent than any Ruſſian peaſants, and live far more comfortably. They are making conſiderable progreſs in civilization, and this is perhaps, ſo far as the bulk of the people are concerned, the happieſt part of that great empire.

224 Grand Tartary.

We now return to the territory from which we ſet out, Grand Tartary, or the elevated level tract which conſtitutes the central region of Aſia. This high country poſſeſſes conſiderable variety of ſoil and appearance. Towards China is an immenſe deſert forming the boundary of that empire. It conſiſts of ſands, that move with the winds like the current of a river. Nature has formed three paſſages across this by means of three chains of mountains, which, as in Arabia or in Africa, are mixed with pleaſant valleys amidſt theſe oceans of ſand. Travellers who take any other courſe are apt to be overwhelmed with the torrents of ſand, which are equally dangerous as in the Arabian deſert.

225 Deſert of Lop, and roads through it.

Aſia.

The firſt of theſe communications is in latitude 42° north, to the eaſt-north-eaſt of Pekin; the ſecond to the eaſt of the province of Shen-ſi; and the third in latitude 32°, to the eaſt of Hami, on the frontiers of Thibet. By theſe roads a ſafe acceſs was given through the vaſt Tartarian regions, from the countries bordering on the Caſpian ſea, and more remotely from Europe itſelf, to caravans of merchants, who had no other way of carrying on commerce with China in the middle ages, before the invention of the mariners compaſs, and the diſcovery of the paſſage round the Cape of Good Hope, had laid open an eaſier mode of communication. It is not wonderful, that when travelling in theſe dreary ſolitudes, the imaginations of men ſhould have been haunted and terrified by illuſions. Accordingly, Marco Polo, a traveller in the middle ages who paſſed through the great deſert, which he names the *deſert of Lop*, ſays, that during the night, the caravans are terrified with the demons which haunt theſe horrid ſands and dreadful deſerts; the travellers muſt be careful how they ſtray, for they will imagine themſelves called by their names by voices familiar to them, till they are brought to the edge of a precipice, and ſometimes they will be entertained with aerial muſic. Theſe romances reached Europe; and our poet, Milton, makes the lady in Comus, when benighted and bewildered on her way, to ſpeak in the ſtyle of them.

> ——— "A thouſand fantaſies
> Begin to throng into my memory
> Of calling ſhapes, and beck'ning ſhadows dire,
> And aery tongues, that ſyllable men's names
> On ſands and ſhores and deſert wilderneſſes."

Even theſe deſerts, however, are not entirely deſtitute of inhabitants, as a few Tartars are found upon them, with their horſes, aſſes, and mules.

226 Soil of Tartary, and inhabitants.

The ſoil of this high region poſſeſſes a conſiderable variety of ſoil. In general, however, though it bears abundance of trees and graſs, the climate is extremely ſevere. The ſummits of all the chains of mountains are covered with perpetual ſnow, which augments the cold of the adjoining plains. Even in the ſouthern parts of it, in latitude 31° 39′, within eight degrees of the burning Calcutta, the cold is frequently found to reach 29° below the freezing point, and this even within a dwelling houſe. The high country, as already mentioned, looks down from its different ſides upon Perſia, India, China, and Siberia, towards all which it is ſurrounded by ſteep precipices of difficult deſcent, which exclude its inhabitants from holding any eaſy intercourſe with theſe regions. Southward, however, on the ſide of India, the mountains appear to be moſt precipitous, and the approach moſt difficult. Towards Siberia, on the north, it ſeems leſs ſo, and accordingly it is chiefly in that direction, or by the north-eaſt or ſouth-weſt, that the Tartars have in different ages approached China or Perſia, and through them the ſouthern regions of the Indies. The inhabitants of this lofty territory have in every age poſſeſſed the ſame character, and engaged in the ſame occupations. They have ſubſiſted in a paſtoral ſtate, by means of their flocks and herds, and upon the fleſh of ſuch wild animals as they could obtain by the chaſe. They have, at the ſame time, been rude, and in general illiterate barbarians, poſſeſſing ſimilar manners to their Siberian kindred, whom we have already deſcribed, the Tungooſe, the Yakuti, and Burati. It is a ſingular circumſtance, however, that in the ſouthern part of this territory, called *Thibet*, a ſuperſtition ſhould have eſtabliſhed itſelf, which gives to an eſtabliſhed prieſthood the whole dominion of the ſtate. What proves in a ſingular manner the influence of education upon mankind, is this, that the ſubjects of the lama, or high pontiff of the Tartars of Thibet, are no leſs unwarlike and unfit to defend themſelves againſt invaders, than the ſubjects of the high-prieſt, who in the regions of the weſt has ſo long occupied the capital of the Cæſars. This corner, however, of Grand Tartary, muſt be regarded merely as an exception to the general character of the people, who have at all times diſplayed the greateſt aptitude for military enterpriſes. From this high region the great conquerors of Aſia have deſcended, and under the names of Moguls, Turks, or Tartars, have repeatedly overrun, and aſſumed complete dominion over the ſurrounding civilized nations.

227 Idea of the hiſtory of Aſia and its revolutions.

The general hiſtory of the great continent of Aſia may be ſtated in a few words. When the civilized nations which occupy the coaſts of it on the weſt, the ſouth, and the eaſt, are well governed; when ſociety is in a proper ſtate, and its powers can be directed with ſkill and energy for the public protection, Grand Tartary becomes a place of little importance, or is merely regarded as a grazing territory fit for the breeding of cattle, which periodically are brought down to the great markets of the richer countries in which they are intended to be fattened and conſumed. The Tartars themſelves, divided into an immenſe multitude of tribes, are eaſily kept by the intrigues of their more artful neighbours in a ſtate of conſtant domeſtic hoſtility, or they readily ſubmit to the dominion, and engage in the ſervice of the rulers of a better ſoil and climate, to which they are at all times willing to emigrate.

On the contrary, when the arrangements of ſociety become defective in the ſurrounding nations; when public inſtitutions are allowed to fall into decay, and when anarchy and weakneſs of government prevail, the Tartars gradually reſume their independence. Being no longer either divided by the arts or overawed by the power of their neighbours, they acquire a contempt for their weakneſs, and an avidity to poſſeſs their riches. On ſuch occaſion, if an aſpiring chief of a Tartar tribe is able by perſuaſion or by force to unite under his ſtandard a few neighbouring tribes, he ſpeedily becomes dangerous to the nations in his vicinity, and almoſt to the human race. By the booty obtained in ſome unſucceſsful inroads, he acquires new aſſociates; the hope of plunder brings his whole countrymen to his ſtandard, and the few who are not led by hope, are compelled to follow and obey him through fear. All Tartary is ſoon in motion, and China, Perſia, and India, are deſolated and ſubdued.

That this is a correct account or true theory of the hiſtory of Aſia, is evident from its preſent and paſt ſtate. At preſent, China, which has repeatedly been conquered by the Tartars, commands them with the greateſt eaſe. The power of the Chineſe emperor is uncontrouled in the country of Thibet, which he protects by his arms, and rules by mandarins, his deputies,

Asia.

ties. Almoſt the whole of the high region of Tartary weſtward to Imaus, which looks down upon the Caſpian ſea, and northward along the coaſt of the Amoor, and the Baikal Lake, acknowledges his authority. The fame appears to have been the caſe during the third century of the Chriſtian era, when a Chineſe general, in the reign of Vou-ti-thi, firſt emperor of the ſeventh dynaſty, marched as far as the Caſpian. A ſingle anecdote will ſufficiently point out the authority which the Chineſe poſſeſſed over Tartary at that period. Mango, a Tartar chief, whoſe horde frequented the ſkirts of China, having incurred the diſpleaſure of the government of that country, retired with his followers to the banks of the Oxus, and implored the protection of Sapor, the reigning emperor of Perſia. The emperor of China claimed the fugitive, and alleged the rights of ſovereignty. The Perſian monarch pleaded the laws of hoſpitality, and with ſome difficulty avoided a war, by the promiſe, that he would baniſh Mango to the uttermoſt parts of the weſt; a puniſhment, as he deſcribed it, not leſs dreaded than death itſelf. Armenia was choſen for the place of exile, and a large diſtrict was aſſigned to the Scythian horde, on which they might feed their flocks and herds, and remove their encampment from one place to another, according to the different ſeaſons of the year.—Between that period and the preſent, however, China has been repeatedly deſolated by Tartar invaſions, though it has always riſen from its ruins, and reſumed its ancient power and proſperity.

228 Story of Mango. See Gibbon's Hiſtory.

Thus Aſia has been the ſcene of continual revolutions. At one period the Tartars have been divided and weak barbarians, deſtitute of arts and of power, and ſubject to the controul of their civilized neighbours. Theſe neighbours have at the ſame time been proſperous, commercial, and great. After the lapſe of ſome time, however, the reverſe of all this has taken place; the civilized nations have ſunk into anarchy; Tartary has become ſtrong; its ferocious tribes have united, and the enterpriſes reſulting from their union have covered the earth with deſolation and carnage. Thus the hiſtory of Aſia has always proceeded in a circle; and it becomes the duty of the philoſophical geographer to inveſtigate the cauſes of this peculiarity, which has attended the human race in ſo great a portion of the globe. We ſhall here, therefore, endeavour firſt to point out thoſe qualities in the character and manners of the Tartars, which have enabled them to vanquiſh the civilized nations of the earth from China to Germany, for ſo far their conqueſts have reached, as the Hungarians and the Turks originally deſcended from Grand Tartary, as well as the race of princes who now rule the great empire of China. We ſhall afterwards endeavour to explain the circumſtances in the ſtate of ſociety among the eaſtern nations, which periodically reduce them to degeneracy and political weakneſs, and prevent their perſevering in that career of civilization and of improvement, in which the nations of Europe are now ſo rapidly advancing, and to which the friends of humanity and of ſcience, as yet rather wiſh than hope a perpetual duration. If we are ſucceſsful in our inveſtigation of the cauſes of the revolutions now alluded to, the philoſophy of general hiſtory will become extremely ſimple, and mankind will be enabled, from the experience of paſt ages, to diſtinguiſh the circumſtances which [illegible] within themſelves the ſeeds of [illegible], from thoſe which have a tendency to [illegible] the energies of the human character, and to perpetuate upon the earth the dominion of civilization and of virtue over barbariſm and ignorance.

229 Arrangement of the following remarks.

We formerly remarked, that the human character is formed by its ſituation, or by the circumſtances which it receives. The education, manners, or barbariſm, or the ſituation in which they are placed, is almoſt entirely the reſult of their phyſical wants, and of the climate and ſoil which they inhabit. Hence their character is formed by theſe circumſtances, and is the ſame in every age. On the contrary, the moſt remarkable circumſtances in the ſituation and character of civilized men, and thoſe which have the moſt powerful effect upon their character, are not [illegible] from the cold or heat of the region in which they are born, or from its comparative ſterility or fertility, [illegible] the civil, religious, and political inſtitutions which have been eſtabliſhed in it, and the degree in which the human mind is habituated to the [illegible] lightened ſcience, or accuſtomed to make exertions for the improvement of the various arts of life. Hence we ſhall find, that although the Tartars always reſemble each other, yet in countries of equal [illegible] and of ſimilar temperature, the Turkiſh Perſian, and the Chineſe and Indians, differ widely in conſequence of the diverſity of their inſtitutions.

231 Extent of Tartary.

Though Grand Tartary, ſituated in the centre of Aſia, and in contact with its great monarchies, is the place from which the revolutions of that continent have uſually commenced, this high region muſt not be conſidered as the ſole country of that barbarous race of people, uſually called *Tartars* by the Europeans. We have ſeen, that kindred tribes inhabit the countries to the northward of China upon the river Amoor; they alſo occupy the whole length of the habitable part of Siberia, and proceed weſtward to the Caſpian ſea, and along the northern ſhores of the Black ſea, to the mouth of the Danube. Thus they range over 110 degrees of longitude. When a movement, however, is once begun in Grand Tartary, it is apt to extend itſelf in a leſſer or greater degree over the whole of thoſe ſavage regions. Vanquiſhed tribes are driven weſtward before their conquerors, and precipitated upon others, who in their turn are preſſed upon the northern nations of Europe. At other times, the whole barbarous world ſubmitting to the ſame maſter, and gathering around his victorious ſtandard, has been known to pour down upon the more wealthy and poliſhed nations of the ſouth. In this way were accompliſhed the great conqueſts of the Moguls and Tartars, the Turks, and the Huns. A Tartar chief has been known to number 1,500,000 followers in arms, and to make an expedition at the head of 500,000 horſe. Zingis Khan's army uſually amounted to 800,000 barbarian cavalry, who trode down the nations in their progreſs.

232 Conſidered as a nation of ſhepherds and of warriors, [illegible] the following circumſtances have in [illegible] contributed to prepare the Tartar, or as they were anciently called the *Scythian tribes*, for a career of victory.

Arrian.

The corn or the rice which conſtitutes the ordinary and wholeſome food of a civilized people can be procured only by the patient toil of the huſbandman. Some

ry, vol. ii.

Aſia. of the ſavages who dwell between the tropics are plentifully ſupplied with vegetable food by the liberality of nature; but in the climates of the north, and in the ſterile plains of Grand Tartary, a nation of ſhepherds is reduced to depend for ſubſiſtence upon their flocks and herds. When animal food is dreſſed in a certain way, the common aſſociation of carnivorous and cruel, probably deſerves to be conſidered in no other light than that of a humane prejudice; but if it be true that the ſentiment of compaſſion is imperceptibly weakened by the ſight and practice of domeſtic cruelty, we may obſerve, that the horrid objects which are diſguiſed by the arts of European refinement are exhibited in their naked and moſt diſguſting ſimplicity in the tent of a Tartarian ſhepherd. The ox or the ſheep are ſlaughtered by the ſame hand from which they were accuſtomed to receive their daily food; and the bleeding limbs are ſerved, with very little preparation, on the table of their unfeeling murderer. In the military profeſſion, and eſpecially in the conduct of a numerous army, the excluſive uſe of animal food appears to be productive of the moſt ſolid advantages. Corn is a bulky and periſhable commodity; and the large magazines which are indiſpenſably neceſſary for the ſubſiſtence of our troops, muſt be ſlowly tranſported by the labour of men and horſes. But the flocks and herds which accompany the march of the Tartars afford a ſure and increaſing ſupply of fleſh, milk, &c. In the far greater part of the uncultivated waſte the vegetation of the graſs is quick and luxuriant; and there are few places ſo extremely barren that the hardy cattle of the north cannot find ſome tolerable paſture. The ſupply is multiplied and prolonged, by the undiſtinguiſhing appetite and patient abſtinence of the Tartars. They indifferently feed on the fleſh of thoſe animals that have been killed for the table or have died of diſeaſe. Horſe fleſh, which has in every age and country been proſcribed by the civilized nations of Europe and Aſia, they devour with peculiar greedineſs; and this ſingular taſte facilitates the ſucceſs of their military operations. The active cavalry of Scythia is always followed in their moſt diſtant and rapid incurſions by an adequate number of ſpare horſes, who may be occaſionally uſed, either to redouble the ſpeed or to ſatisfy the hunger of the barbarians. Many are the reſources of courage and poverty. When the forage round a camp of Tartars is almoſt conſumed, they ſlaughter the greateſt part of their cattle, and preſerve the fleſh, either ſmoked, or dried in the ſun. On the ſudden emergency of a haſty march, they provide themſelves with a ſufficient quantity of little balls of cheeſe, or rather of hard curd, which they occaſionally diſſolve in water, and this unſubſtantial diet will ſupport, for many days, the life and even the ſpirits of the patient warrior. But this extraordinary abſtinence, which the ſtoic would approve, and the hermit might envy, is commonly ſucceeded by the moſt voracious indulgence of appetite. The wines of a happier climate are the moſt grateful preſent, or the moſt valuable commodity, that can be offered to the Tartars; and one of the moſt remarkable examples of their induſtry conſiſts of the art, already mentioned, of extracting from mares milk a fermented liquor which poſſeſſes ſome power of intoxication. Like the animals of prey, the ſavages, both of the old and new world, experience the alternate viciſſitudes of famine and plenty, and their ſtomach is inured to ſuſtain, without much inconvenience, the oppoſite extremes of hunger and of intemperance. Aſia.

The nature of their habitations alſo prepares the Tartars for war. In a country in which agriculture is carried on, the huſbandmen are ſcattered over the face of the ſoil, and ſome time muſt elapſe before they can aſſemble in a body to defend their own confines, or to invade the territories of others. The progreſs of manufactures and commerce inſenſibly collects a large multitude within the walls of a city: but theſe citizens are no longer ſoldiers; the arts which adorn and improve the ſtate of civil ſociety, corrupt the habits of the military life. The paſtoral manners of the Scythians ſeem to unite the different advantages of ſimplicity and refinement. The individuals of the ſame tribe are conſtantly aſſembled, but they are aſſembled in a camp; and the native ſpirit of theſe dauntleſs ſhepherds is animated by mutual ſupport and emulation. The houſes of the Tartars are no more than ſmall tents, of an oval form, which afford a cold and dirty habitation for the promiſcuous youth of both ſexes. The palaces of the rich conſiſt of wooden huts, of ſuch a ſize that they may be conveniently fixed on large waggons, and drawn by a team perhaps of 20 or 30 oxen. The flocks and herds, after grazing all day in the adjacent paſtures, retire on the approach of night, within the protection of the camp. The neceſſity of preventing the moſt miſchievous confuſion in ſuch a perpetual concourſe of men and animals, muſt gradually introduce, in their diſtribution of the order and the guard of the encampment, the rudiments of the military art. As ſoon as the forage of a certain diſtrict is conſumed, the tribe, or rather army of ſhepherds, makes a regular march to ſome freſh paſtures; and thus acquires, in the ordinary occupations of the paſtoral life, the practical knowledge of one of the moſt important and difficult operations of war. The choice of ſtations is regulated by the difference of ſeaſons. In the ſummer the Tartars advance towards the north, and pitch their tents on the banks of a river, or at leaſt in the neighbourhood of a running ſtream; but in the winter they return to the ſouth, and ſhelter their camp, behind ſome convenient eminence, againſt the winds, which are chilled in their paſſage over the bleak and icy regions of Siberia. Theſe manners are admirably adapted to diffuſe, among the wandering tribes, the ſpirit of emigration and conqueſt. The connexion between the people and their territory is of ſo frail a texture that it may be broken by the ſlighteſt accident. The camp, and not the ſoil, is the native country of the genuine Tartar. Within the precincts of that camp, his family, his companions, his property, are always included; and in the moſt diſtant marches, he is ſtill ſurrounded by the objects which are dear or valuable, or familiar in his eyes. The thirſt of rapine, the fear or the reſentment of injury, the impatience of ſervitude, have, in every age, been ſufficient cauſes to urge the tribes of Scythia boldly to advance into ſome unknown countries, where they might hope to find a more plentiful ſubſiſtence or a leſs formidable enemy. Even the ſeverity of the climates which they inhabit facilitates their enterpriſes. In the winter ſeaſon, the broad and rapid rivers that diſcharge their waters into the Euxine, the Caſpian, or the Icy ſea, are ſtrongly frozen; the fields 234 Habitations.

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Asia. are covered with a bed of ſnow; and the fugitive or victorious tribes may ſecurely traverſe with their families, their waggons, and their cattle, the ſmooth and hard ſurface of an immenſe plain.

235 Exercises. The ordinary exerciſes of theſe people prepare them for war. The paſtoral life, compared with the labours of agriculture and manufactures, is undoubtedly a life of idleneſs; and as the moſt honourable ſhepherds of the Tartar race devolve on their captives the domeſtic management of their cattle, their own leiſure is ſeldom diſturbed by any ſervile and aſſiduous cares. But this leiſure, inſtead of being devoted to the ſoft enjoyments of love and harmony, is uſually ſpent in the violent and ſanguinary exerciſe of the chaſe. The plains of Tartary are filled with a ſtrong and ſerviceable breed of horſes, which are uſually trained for the purpoſes of war and hunting. The Scythians of every age have been celebrated as bold and ſkilful riders; and conſtant practice has ſeated them ſo firmly on horſeback, that they were ſuppoſed by ſtrangers to perform the ordinary duties of civil life, to eat, drink, and even to ſleep, without diſmounting from their ſteeds. They excel in the dexterous management of the lance; the long Tartar bow is drawn with a nervous arm; and the weighty arrow is directed to its object with unerring aim, and irreſiſtible force: theſe arrows are often pointed againſt the harmleſs animals of the deſert, which increaſe and multiply in the abſence of their moſt formidable enemy; the hare, the goat, the roebuck, the fallow-deer, the ſtag, the elk, and the antelope. The vigour and patience both of the men and horſes are continually exerciſed by the fatigues of the chaſe; and the plentiful ſupply of game contributes to the ſubſiſtence and even luxury of a Tartar camp. But the exploits of the hunters of Scythia are not confined to the deſtruction of innoxious beaſts; they boldly encounter the angry wild-boar when he turns againſt his purſuers, excite the ſluggiſh courage of the bear, and provoke the fury of the tiger as he ſlumbers in the thicket. Where there is danger there may be glory; and the mode of hunting which opens the faireſt field to the exertions of valour, may juſtly be conſidered as the image and as the ſchool of war. The general hunting matches, the pride and delight of the Tartar princes, compoſe an inſtructive exerciſe for their numerous cavalry. A circle is drawn of many miles in circumference, to encompaſs the game of an extenſive diſtrict; and the troops that form the circle regularly advance towards a common centre, where the captive animals, ſurrounded on every ſide, are abandoned to the darts of the hunters. In this march, which frequently continues many days, the cavalry are obliged to climb the hills, to ſwim the rivers, and to wind through the vallies, without interrupting the preſcribed order of their gradual progreſs. They acquire the habit of directing their eye, and their ſteps, to a remote object; of preſerving their intervals; of ſuſpending or accelerating their place, according to the motions of the troops on their right and left; and of watching and repeating the ſignals of their leaders. Their leaders ſtudy in this practical ſchool the moſt important leſſon of the military art; the prompt and accurate judgment of ground, of diſtance, and of time. To employ againſt a human enemy the ſame patience and valour, the ſame ſkill and diſcipline, is the only alteration which is required in real war; and the amuſements of the chaſe ſerve as a prelude to the conqueſt of an empire.

Aſia. The nature of their domeſtic government has at all times greatly favoured every attempt of the Tartars towards conqueſt. The political ſociety of the ancient Germans has the appearance of a voluntary alliance of independent warriors. The tribes of Scythia, diſtinguiſhed by the modern appellation of *hordes*, aſſume, on the contrary, the form of a numerous and increaſing family; which, in the courſe of ſucceſſive generations, has been propagated from the ſame original ſtock. The meaneſt and moſt ignorant of the Tartars preſerve, with conſcious pride, the ineſtimable treaſure of their genealogy; and whatever diſtinctions of rank may have been introduced by the unequal diſtribution of paſtoral wealth, they mutually reſpect themſelves and each other, as the deſcendants of the firſt founder of the tribe. The cuſtom, which ſtill prevails, of adopting the braveſt and moſt faithful of the captives, may countenance the very probable ſuſpicion, that this extenſive conſanguinity is in a great meaſure legal and fictitious. But the uſeful prejudice, which has obtained the ſanction of time and opinion, produces the effects of truth; the haughty barbarians yield a cheerful and voluntary obedience to the head of their blood; and their chief, or murſa, as the repreſentative of their great father, exerciſes the authority of a judge in peace, and of a leader in war. In the original ſtate of the paſtoral world, each of the murſas (if we may continue to uſe a modern appellation) acted as the independent chief of a large and ſeparate family; and the limits of their peculiar territories were gradually fixed by ſuperior force, or mutual conſent. When, by a coincidence of fortune and of talents, a ſucceſsful chieftain contrived to unite under his command a great number of ſeparate hordes, with a view to a common enterpriſe, he found, from their ordinary habits of obedience and ſubordination, an army ready formed and arranged for action: each tribe or horde followed its own chief, to whoſe authority it was accuſtomed to ſubmit. If the chief was taught to obey, the obedience of his horde might, from the habits of the people, be ſafely relied on. Thus theſe barbarians have at all times been able to ſend forth detachments upon diſtant expeditions, which have acted with all the promptitude of a well diſciplined military force, and enabled them at once to puſh their conqueſts towards the tropic and polar circle, the Chineſe empire and the banks of the Danube.

Of their Government.

237 The Tartars acquainted with the Chineſe military arts.

To theſe advantages the Tartar chiefs have ſometimes added a portion of military ſkill, according to the ſtate in which it exiſted in the civilized nations in their neighbourhood. It has been an uſual practice among the Chineſe to receive into their pay ſome of the Tartar chiefs, and to uſe as ſoldiers conſiderable bodies of this brave and hardy race of men. Theſe are employed as the cavalry of the Chineſe armies, and become a convenient engine in the hands of an artful government, at once to keep Tartary itſelf in ſubjection, and to repreſs every attempt at rebellion among the Chineſe themſelves, when they at any time happen to become diſcontented either in conſequence of a corrupted and tyrannical adminiſtration, or of accidental famine, to which that over-peopled country is expoſed. But theſe Tartar auxiliaries, or tools of power, have ſometimes ultimately become very dangerous. When the Chineſe princes,

Aſia. princes, truſting to the paſſiveneſs of their people, and to the irreſiſtible force of their mercenary troops, have ſuffered themſelves to ſink into indolence, and to neglect the adminiſtration of affairs, the Tartar chiefs in their pay have ſometimes learned to deſpiſe their feeble maſters, and have turned againſt them the portion of military knowledge which they had acquired in the Chineſe ſervice, adding to it the whole vigour and ferocity which they derived from the habits of their early life. The moſt celebrated of the Tartar chiefs was the renowned Temujin, or Zinghis, who, in the 13th century of the Chriſtian era, erected a monarchy among his paſtoral countrymen, and, in his own perſon, or by his deſcendants, ſubdued the whole civilized nations of Aſia. In his youth he was a vaſſal of the Chineſe empire: he was led to invade it by a knowledge of its weakneſs and of the means of ſucceſs, at a time when it was diſtracted by domeſtic faction, and left expoſed in conſequence of the revolt of 100,000 Khitans who guarded the frontier. The conqueſt of the five northern provinces of that empire rendered him more dangerous to other nations. He marched weſtward, and attacked the flouriſhing and civilized empire of Carizme, which then exiſted to the eaſtward of the Caſpian ſea. After a battle, in which the ſultan of Carizme loſt 160,000 of his troops, that prince withdrew into his towns, in the hope of wearying out the barbarians by the length and difficulty of a number of regular ſieges. But the foreſight of Zinghis had formed a body of Chineſe engineers, ſkilled in the mechanic arts, informed perhaps of the ſecret of gunpowder, and capable, under his diſcipline, of attacking a foreign country with more vigour and ſucceſs than they had defended their own. The Perſian hiſtorians relate the ſieges and reduction of Otrar, Cogende, Bochara, Samarcand, Carizme, Herat, Merou, Nilabour, Balch, and Candahar; and the conqueſt of the rich and populous countries of Tranſoxiana, Carizme, and Choraſan. From the Caſpian to the Indus, the Tartars ruined a tract of many hundred miles, which was adorned with the habitations and labours of mankind; and five centuries have not been ſufficient to repair the ravages of four years.

The right of hereditary ſucceſſion to the ſovereignty of a number of united hordes, together with the revenue, which by their cuſtoms, the ſovereign was entitled to levy, had a tendency to render them long formidable. Zinghis had originally been raiſed to power by the admiration of his equals, and the ſucceſs of his enterpriſes, under the title of khan. The right of hereditary ſucceſſion was long confined to the blood of the founder of the monarchy, and at this moment all the khans who reign from Crimea to the wall of China, repreſent themſelves as the lineal deſcendants of the renowned Zinghis. But as it is the indiſpenſible duty of a Tartar ſovereign to lead his warlike ſubjects into the field, the claims of an infant are often diſregarded; and ſome royal kinſman, diſtinguiſhed by his age and valour, is entruſted with the ſword and ſceptre of his predeceſſor. Two diſtinct and regular taxes are levied on the tribes, to ſupport the dignity of their national monarch, and of their peculiar chief; and each of thoſe contributions amounts to the tythe, both of their property and of their ſpoil. A Tartar ſovereign enjoys a tenth part of the wealth of his people; and as his own domeſtic riches of flocks and herds increaſe in a much larger proportion, he is able plentifully to maintain the ruſtic ſplendour of his court, to reward the moſt deſerving or the moſt favoured of his followers, and to obtain, from the gentle influence of corruption, the obedience which might be ſometimes refuſed to the ſtern mandates of authority. The manners of his ſubjects, accuſtomed, like himſelf, to blood and rapine, might excuſe, in their eyes, ſuch partial arts of tyranny as would excite the horror of a civilized people; but the power of a deſpot has never been acknowledged in the deſerts of Scythia. The immediate juriſdiction of the khan is confined within the limits of his own tribe, and the exerciſe of his royal prerogative has been moderated by the ancient inſtitution of a national council. The coroultai, or diet, of the Tartars was long regularly held in the ſpring and autumn in the midſt of a plain, where the princes of the reigning family and the murſas of the reſpective tribes may conveniently aſſemble on horſeback, with their martial and numerous trains; and the ambitious monarch, who reviewed the ſtrength, muſt conſult the inclination of an armed people. Thus the rudiments of a feudal government may be diſcovered in the conſtitution of the Scythian or Tartar nations; and in all their conqueſts they have uniformly been diſpoſed in ſome degree to retain ſome reſemblance of this form of government, by diſtributing their new territory among their chiefs, to be ruled and divided among their followers in ſubordination to the head of the ſtate.

238 Weakneſs of other nations neceſſary to the ſucceſs of the Tartars.

One circumſtance, however, has always been neceſſary to the ſucceſs of Scythian or Tartar conqueſt, that the neighbouring nations ſhould be in a ſtate of weakneſs. The Chineſe and the Ruſſians are at preſent the tyrants or maſters of the Tartars, who heretofore tyrannized over the world. The Chineſe rule them partly by art and partly by force; and the Ruſſians find that they are unable to reſiſt the arts and the military ſkill of Europe. The population of China amounts to between 300,000,000 and 400,000,000. That of Hindooſtan is equal to 160,000,000; and the ancient Perſian empire was capable of pouring forth to the invaſion of Europe an army amounting, as it is ſaid, to three millions of men. Such nations, poſſeſſed of ſuperior arts and means of defence, could not upon their own territory have been vanquiſhed by any number of barbarians that could unite againſt them, did not ſome defect exiſt in their character, or had they not been brought into a ſtate of political weakneſs by ſome fault in their government. Such reaſoning is natural to modern Europeans, who ſee the preſent ſtate of the Tartars with juſt indifference, as by no means formidable to the peace of the world. It is confirmed by hiſtory and experience. We ſhall therefore proceed to conſider the circumſtances which have hitherto had a tendency to expoſe all the Aſiatic ſtates to conqueſt and to ruin.

239 Circumſtances that have weakened the Aſiatic ſtates.

One circumſtance, which in moſt of the Aſiatic ſtates has a powerful tendancy to produce a permanent inferiority of character in the people, and a conſtant tendency to anarchy and revolution in the government, ariſes from the imperfect ſtate of domeſtic ſociety. In all the countries of Aſia that have adopted the Mahometan religion, polygamy is authorized by law, that is to ſay, beſides Arabia, in Turkey, Perſia, and Hindooſtan, which laſt contains 10,000,000 of Mahometans. The ſame practice is alſo allowed in China,

240 Polygamy.

Aſia. China, and it has always prevailed among the rude tribes of Tartars. It is probable, that this law upon the whole facilitates population. It divides between the rich and the poor more equally, that is, in a better proportion to their means, the expence of rearing the future generation, as rich men, who can afford to do ſo, will naturally be led to have a greater number of children. But at the ſame time, there can be no doubt that this law muſt have a powerful tendency to repreſs the intellectual improvement of the people. The rich in every country dictate the faſhions of life; and by this inſtitution a faſhion is neceſſarily introduced of treating women with jealouſy, and thus of ſecluding one half the ſpecies from the ordinary ſociety of the other. Women thus ſhut up in retirement, muſt poſſeſs illiterate and unimproved characters: they muſt alſo be prevented in a great degree from carrying on any part of the common buſineſs of life. From theſe circumſtances more evils will ariſe than are at firſt obvious. One half of ſociety, inſtead of being uſeful, becomes a burden upon the induſtry of the other. A ſecluded and unſocial mode of life is introduced, and as the human powers are beſt improved by the intercourſe with ſociety, a conſiderable difficulty is thrown in the way of the enlargement of our faculties. Beſides this, it muſt happen, that the ignorance and imbecility of one half of the ſpecies will affect the other. An Aſiatic retires from the management of his buſineſs, to the ſociety of an unintelligent and weak being, who neither ſees nor knows any thing of the world or its affairs. In ſuch ſociety he muſt relinquiſh his reaſon and his rational faculties, before he can enjoy much ſatisfaction. In ſuch ſociety, however, he was educated during his firſt years, and a great part of his time muſt neceſſarily be ſpent. He cannot fly from it to the houſe of a friend, for no friend can receive him; and he can receive nobody freely into his dwelling, leſt his female priſoners ſhould be ſeen. This at leaſt is the caſe with all thoſe who live not in ſpacious manſions with a variety of apartments. In ſuch a ſtate of ſociety, it is impoſſible that many men can acquire, or long preſerve, much zeal for ſcientific purſuits, or that the improvement of literature and of ingenious arts can be very earneſtly cultivated.

241 Its effects on population,

242 on the character of the people,

243 on the form of houſes and cities,

Theſe effects of the law which regulates domeſtic ſociety, appear even to the moſt careleſs obſerver of an Aſiatic city. It occupies a large extent of territory, becauſe every family ſecludes itſelf from the other. Every houſe is ſurrounded by a wall, and ſtands in an enclosed area: Each family thus fortifies itſelf within a rampart againſt the intruſion of all neighbours. Hence it has happened, that no attempt has ever been made in the cities of Aſia to eſtabliſh a republican form of government, even when the people were driven to deſpair by the ſevereſt oppreſſion. There exiſts not that rapid communication of ſentiment, and that confidence in each other, which takes place where ſociety is more intimately blended, and which leads men to repoſe ſuch confidence in each other, as to believe that they can act under the mere authority of public pactions or laws, without the interpoſition of a maſter. The mode of erecting their dwellings alſo explains the wonderful ſtories, told us by the ancient writers, of the immenſe extent of Babylon and of Nineveh. It alſo accounts for the great tracts of territory, which in modern times are occupied by the Aſiatic cities. The circumſtances which have contributed more than any thing elſe to expoſe them to the calamity of foreign invaders. The extent of their walls, in proportion to the population they contain, rendered the defence of them difficult or impoſſible.

Aſia.

244

The law of polygamy has alſo had a very fatal effect upon the Aſiatic governments, and has been one of the moſt ordinary means of introducing anarchy into them. The princes have very numerous families by different women. Each of the female favourites of the reigning monarch attempts to eſtabliſh her own children in the moſt advantageous ſituations. Hence, the Aſiatic courts are at all times occupied by an endleſs train of dangerous intrigues. Attempts are often ſucceſsfully made to inſpire an old man with jealouſy of his eldeſt ſon, the apparent heir. The knowledge of the exiſtence of ſuch attempts, or even of the poſſibility of their exiſtence, and of the fatal effects which they may produce in a deſpotic government, inſpires all the ſons of the prince to watch the conduct both of him and of each other with the utmoſt jealouſy. That jealouſy is apt to burſt out into open rebellion, and frequently does ſo. At all events, upon the death of an Aſiatic monarch, his numerous ſons, whoſe rivalſhip, hatred, and jealouſy of each other, have hitherto been confined within decent bounds, openly break out into violence. A younger brother knows that he is hated by the elder, who is now become his maſter. In defence of his own exiſtence, therefore, he is compelled to have recourſe to arms, and to obtain a crown or ſubmit to deſtruction. In this way, the ſucceſſor of an Aſiatic prince has often to begin his reign by ſtruggling againſt a conſiderable number of deſperate rebellions, and muſt wade to the throne through the blood of his neareſt kindred. As ſucceſs does not always attend the arms of the elder brother, the law of primogeniture, being frequently violated, loſes its importance and eſtimation in the eyes of the multitude. The royal family itſelf, covered as its members muſt be with parricides and crimes, cannot be greatly reſpected by the people, in whoſe eyes ſucceſs and victory become, therefore, the only undoubted titles to obedience.

245 Produces

Powerful ſubjects alſo, therefore, or enterpriſing military leaders, are frequently tempted to diſregard the claims of the reigning family, and to appeal to the fortune of arms as a title to dominion. When ſucceſsful, they find a people diſtracted by civil wars, and by the pretenſions of different candidates, ready to acquieſce in any government that can beſtow upon them a temporary repoſe.

247 produces bad government

Even ſhould a reigning family eſcape theſe obvious calamities which lay waſte the territories of a nation, and overthrow its proſperity by ſanguinary civil conteſts, there are evils by which the law of polygamy more gradually, though not more certainly, undermines the ſafety of the ſtate. The founder of a new dynaſty is uſually an ambitious and active military chief. His firſt ſucceſſors, educated in an active reign, and anxious to ſecure their dubious authority, uſually partake his talents and energy. Time, however, ſoon ſanctifies their right to the throne, though originally founded in uſurpation. The monarch now placed in ſecurity, indulges in that luxury to which he is tempted by his ſituation: and luxury, where the

Aſia. law of polygamy exiſts, has more powerful and dangerous attractions, and is attended with more pernicious effects, than elſewhere. This kind of luxury, above all others, leads to an indolent life, and to the production of an ignorant and unintelligent character. The prince is led to ſhut himſelf up among a crowd of eunuchs and women, from whoſe ſociety he can derive no improvement, and to whoſe councils and paſſions he is ultimately led to intruſt the direction of the moſt important affairs of his government. The armies of the ſtate are ſoon neglected, by a monarch, whoſe favourites employ every art to inſpire him with a diſguſt of the toils of war, that he may the more eaſily be retained within the precincts of his palace, and under their management and influence. The provinces are ſubjected to the moſt ruinous exactions to gratify their avarice, and every place of public truſt comes to be filled by men who undertake not to adminiſter public affairs, but to extort large ſums of money from the people, to be conveyed to the favourites that rule within the palace. Thus the ſtate experiences a rapid decay of its population and reſources; and if it is attacked from abroad, it has no head to call forth its remaining powers and direct them with vigour and ſkill againſt an invader. The population that remains may ſtill be ſufficiently ample for the defence of its own territory, and abundance of perſonal courage may exiſt among the citizens; but they cannot be arranged
248 or their force rendered effectual, from the want of an
Inſtance of active government. This appears to be preciſely the
Turkey. ſituation of the Turks at the preſent moment. Their firſt princes, inhabiting the frontier of Europe and of Aſia, exhibited, during a much longer period than is uſual in the families of Aſiatic monarchs, a very conſiderable degree of ſpirit and of exertion. But the law which authorizes them to live with a multitude of women, all of whoſe children are legitimate, gradually produced its natural effect. The latter princes have ſhut themſelves up in their palace, and neglected the adminiſtration of affairs. The provinces have been waſted; and inſtead of the numerous people which they once contained, immenſe foreſts are riſing over the whole territory, and becoming the habitation of wild beaſts. The governors of the remoter provinces are aſpiring to independence; anarchy prevails in different quarters; and a foreign conqueſt is only prevented by the jealouſy of the neighbouring nations, who cannot agree to whoſe lot theſe fine countries ſhall fall. Yet at this day the Turks are a race of as ſtout and brave men as their Scythian forefathers. They are equally willing to fly to arms, and ſufficient numbers ſtill remain to ſet every enemy at defiance; but they are not led by thoſe vigorous chiefs who conducted their anceſtors from the foot of Imaus, reſiſted the power of Perſia, ſeized the city of Conſtantine, and diffuſed terror over Europe. A man of talents only is wanting to render them ſtill reſpectable, if not formidable; but their unuſual reſpect for the deſcendants of ſo many illuſtrious princes, has hitherto prevented their government from being ſeized, and their nation preſerved by a bold uſurper; while, in the mean time, their ſultan, loſt in the indolence and voluptuouſneſs of his ſeraglio, and blinded by his favourites, refuſes to come forth and to undertake the direction of the remaining armies of the ſtate, or to place himſelf at the head of a warlike people. Aſia.

This law of polygamy appears to be the ſingle circumſtance that has brought about the revolutions which have occurred in China. From the nature of the ſingular form of government eſtabliſhed there, the human mind is indeed preſerved in a ſtate of perpetual imbecility, and is prevented from riſing in improvement beyond a certain degree; this degree, however, it never fails to attain. It is ſufficient to render the nation decidedly ſuperior to their rude neighbours of Tartary; and as Chineſe improvement can never advance far, there appears no good reaſon why it ſhould ever decline or paſs away. But the law of polygamy from time to time deranges all their inſtitutions, and the regular march of their government. As they aſcribe abſolute power to their monarch, and their laws ſecure tranquillity to the ſtate and complete obedience to his will, he can have no occaſion to quarrel with his people, or to diſturb inſtitutions which give him the command of as much wealth as his wiſhes can crave, and as much power as he perſonally can have any inclination to exert. Accordingly, for ſome time after a recent conqueſt, all goes well in China: the monarch is delighted with the ſubmiſſion and tranquillity of his people, the induſtry and proſperity of the country, and the immenſe revenue which is placed at his diſpoſal, and which he can have no occaſion to uſe otherwiſe then in works of public magnificence, generoſity, or utility. Speedily, however, this peaceable ſtate of things produces its natural effects. The monarch having nothing to fear, and little to do, reſigns himſelf to pleaſure; and that pleaſure moſt probably conſiſts in the kind of indulgence which the law allows and encourages, of collecting around him, and paſſing his time in the ſociety of, a multitude of beautiful women. Such, however, is the ſkilful ſtructure of the Chineſe government, that it proceeds and proſpers without the interference of the prince, who is rather a uſeful name to prevent military uſurpation than an active organ of the conſtitution. Affairs being in the hands of the moſt prudent men in the ſtate, who have riſen by approved fidelity and talents to the higheſt rank and truſt, are conducted with abundance of care; and the reſponſibility of all inferior magiſtrates is enforced. Thus the emperor may be allowed to ſlumber with ſecure dignity in his palace: If he interfere not to do harm, the conſtitution of the ſtate will provide for the management of public buſineſs and the proſperity of the people. But matters cannot long reſt thus. A weak and ignorant prince who paſſes his days ſecluded from the world, amidſt eunuchs and women, will not comprehend the value of that conſtitution at the head of which he is placed; his favourites prevail with him to encroach upon its fundamental maxims; he is induced to diſtruſt thoſe officers who have riſen by a gradual progreſs under the direction of the law to diſtinction and power, and to confer authority upon individuals to whom the conſtitution gives no title to receive it. As implicit obedience to magiſtrates, and above all to the emperor, is a fundamental maxim of Chineſe juriſprudence, and inculcated as ſuperior to all other duties, the will of the emperor meets with no reſiſtance: The conſtitution truſts that he will not attempt to violate it; but
249 Polygamy ruinous to China.

Asia. but if he do ſo, it provides no other remedy than the prayers and entreaties of the higheſt order of mandarins, which they have been known to employ at the hazard of their lives, and even with the certainty of deſtruction. As the imperial will, therefore, can in no way be reſiſted or controuled, when an emperor relinquiſhes himſelf to the dominion of the inmates of his palace, the conſequences ſpeedily occur which we have already mentioned, as reſulting from the law of polygamy in other countries. The defence of the ſtate is diſregarded; worthleſs men are raiſed to the command of armies and provinces; corruption becomes the means of obtaining preferment: the Tartar ſubjects find out the important ſecret, that the reins of government are looſely held, that the barriers which protect the treaſures of a wealthy nation have fallen into decay, and that theſe treaſures have come to be at the mercy of poverty and courage. Some chief endeavours to unite the ſhepherds of the weſt and the north in a common enterpriſe: His firſt efforts procure him plunder, if not dominion, and the proſpect of his riches procures him new adherents, till at laſt the hardy cavalry of Scythia are enabled to diſperſe the feeble and ill-conducted armies of the Chineſe; and their leader and his family, ſeated on the throne of a mighty empire, is gradually led, by ſimilar circumſtances, to proceed in the ſame career, from ſtrength and activity, to weakneſs, degeneracy, and ruin. The conſtitution of China, indeed, triumphs over theſe calamities. The Tartars admire the arts and manners of the vanquiſhed people; and the conqueror is willing to revive and preſerve a conſtitution which preſerves the proſperity of the people, while it ſubmits every thing to the will of their maſter. Had the laws of that empire provided, as in Europe, that the inheritance both of public and private individuals ſhould only paſs to their legitimate children by one woman, China might undoubtedly have avoided many of its revolutions. Its princes might have been men of talents or otherwiſe, according to the ordinary viciſſitudes that in the courſe of nature occur in families; but the poſſeſſion of talents by the prince is not neceſſary to the good government of China: it is enough that he interfere not to do poſitive miſchief, and under ſuch a law, every temptation to do miſchief would be removed from him.

250 General form of government in Aſia,

Another cauſe of periodical weakneſs in Aſiatic nations ariſes from the general form of government that has been there adopted. Excepting in China, the Tartars have in all their conqueſts been led to eſtabliſh themſelves under a ſort of feudal arrangement. In their native country, they were divided and ſubdivided into tribes and families, under a chief who had led them forth to war and conqueſt. In their new territories, it was natural for the chief to reward his ſucceſsful officers with grants of provinces, which they were again to ſubdivide among their followers, under condition of remaining in ſubjection to himſelf, and of being ready on all occaſions to attend him in war. Theſe grants, however, were only beſtowed upon individuals perſonally who received them: They were given as the price or pay of military ſervice: They might be recalled at will, like the commiſſion of an officer; and they were never meant to go to the heirs of the favoured chief, though undoubtedly in equal circumſtances his heirs would be preferred to others. A government like this is expoſed to two kinds of diſorders; the one, ariſing from exorbitant power acquired by the great vaſſals; and the other, ariſing from the too great deſpotiſm of the prince.

251 Feudal.

Under a monarch of great activity and vigilance, the chief vaſſals of the ſtate, who have received large grants of territory, may be retained in ſufficient ſubjection. He may ſummon them and their followers frequently to attend his perſon, and by engaging them in wars under him, may preſerve his perſonal aſcendency over them, by having frequent occaſion to change their ſituations, and to prefer others to the places they occupy. Should his immediate ſucceſſors, however, not be men of equal talents with himſelf, or ſhould a diſputed ſucceſſion occur, the greater chiefs will immediately aſpire to independence: the empire will fall to pieces, and degenerate into a hereditary ariſtocracy, in which every chief is engaged in hoſtility with his neighbours, and in which the people at large, oppreſſed by a multitude of petty tyrants, can enjoy no repoſe or proſperity. Such has been the deſtiny of ſeveral of the nations of Aſia; and it was alſo the deſtiny of Europe after its conqueſt by the northern barbarians. It is true that the European princes gradually recovered the power that had been wreſted from them, and converted into local inheritances by their great nobles. To ſubdue theſe nobles, they aſſociated themſelves with the populace, with the few merchants, and the induſtrious part of the nation. They encouraged theſe people to unite themſelves into communities, and to fortify themſelves with walls. They eſtabliſhed courts of juſtice, whoſe regular and equitable procedure gained the affection of the weak, whom they protected, and brought odium upon the violence and deſpotiſm of the petty local tyrants of the country. The commercial and induſtrious part of the community were induced to contribute to the ſupport of the prince, who ſeemed thus to labour only for their welfare, and to protect them againſt oppreſſion. By this wealth he was enabled to confirm his power, and to ſubdue his refractory vaſſals. By following out theſe prudent maxims for a few generations, the dominion of law and order, along with the power of the ſovereign, were eſtabliſhed in the nations of Europe. But nothing of all this can occur in Aſia. Power may there be acquired by the violence of ſudden conqueſt, but it cannot be gained by a train of artful policy ſteadily purſued from father to ſon during a courſe of ſeveral generations. In conſequence, as already mentioned, of the law of polygamy, no ſooner does a prince die than one of two things occurs; either a war for the ſucceſſion enſues among his children by different wives, which conſumes the wealth of the people, and augments the power of the nobles, upon whom the candidates for dominion muſt rely for aid; or, to prevent this calamity, the eldeſt ſon of the deceaſed monarch ſeizes his younger brothers, and puts out their eyes, or deſtroys their lives. Thus an example of cruelty and injuſtice is exhibited, which deſtroys in the minds of the people every growing ſentiment favourable to the eſtabliſhment of order, and of humane and equitable laws.

252 Feudal governments become ariſtocratic.

On the other hand, it has frequently happened in Aſia that the power of the monarch has not been loſt by its vaſſals converting different diſtricts into hereditary poſſeſſions. A ſucceſſion during a few generations

253 Governments by viceroys.

Aſia.

of active and warlike princes has given leiſure for the chiefs of the Tartar tribes to acquire the manners of the nations whom they vanquiſhed, and to ſink, like them, into a ſtate of permanent ſubjection to a ſovereign, become too powerful to be reſiſted. In this caſe, however, an error exiſts in the general ſtructure of Aſiatic governments, which gradually brings them to decay. The monarch divides his territory into provinces, and over each province he places a governor, or viceroy, whom he appoints and recals at pleaſure. The governor of a province poſſeſſes within it the whole power of the maſter whom he repreſents; he collects the taxes, and remits them to the capital; he adminiſters juſtice by himſelf, or by deputies whom he appoints and removes at pleaſure; and laſtly, he commands within his diſtrict the armies of the ſtate. On a little reflection it will readily be conceived, that a nation governed in this way cannot permanently proſper. An abſolute monarch can ſcarcely fail to be patriotic, becauſe the whole country is his own, and he muſt regard his people as his property, or as a kind of appendage to his family. He will therefore intend to govern them well, or as advantageouſly as poſſible. But the governors whom he places over the provinces muſt entertain very different ſentiments: The ſtate is not their inheritance; they are appointed only for a ſeaſon; and like tenants at will, they will endeavour to make the moſt of their temporary poſſeſſion, though they diminiſh the permanent value of the eſtate. Hence theſe men are always apt to govern ill; and, with a view to make the moſt of their time and opportunity, they oppreſs the people by their rapacity. The monarch has no intention to ſanction their conduct, but there exiſt no other means of reſtraining it than to maintain a perpetual and vigilant inſpection over them. If he is not conſtantly at ſhort intervals travelling into every part of his dominions, and viewing objects with his own eyes, the governors of provinces will take advantage of their ſituation, to oppreſs the people, and will endeavour to ſecure their own ſafety by corrupting the miniſters who are near the perſon of the prince.

In a government thus conſtituted, too much is made to depend upon the activity and vigilance of one man. If the monarch relax in his attention, the ſtate at once begins to decay; and even his perſonal infirmities, his youth, or his old age, produce important effects upon the provinces. When a weak prince happens to ſucceed to the throne, the decline of the empire becomes viſible in a few years; and the moſt active reign ſcarcely ſuffices to repair the injuries which a ſhort period of weak government has occaſioned. All theſe evils are aggravated in Aſia by the tendency which the law of polygamy has to introduce into the palace of the monarch a ſyſtem of ſecluſion from buſineſs, of indolence, and of favouritiſm.

254 Viceregal government adopted in the Roman empire.

In the ancient Roman empire this practice was adopted of ruling the provinces by temporary governors poſſeſſed of unlimited power, and was attended with all the bad conſequences which we have here deſcribed. From its firſt eſtabliſhment, that empire, like an Aſiatic monarchy, underwent a gradual progreſs of decay; and inſtead of the people becoming gradually more powerful, wealthy, and enlightened, every ſcience and every art, together with the population of the ſtate, declined, till the whole was oppreſſed and ſunk under the inroads of the northern barbarians. It is a curious circumſtance, and well worthy of all our attention, that the progreſs of modern Europe is altogether the reverſe of this. In Aſia a monarchy is no ſooner eſtabliſhed than its decline commences, and it gradually becomes weaker and weaker, till, in the courſe of a few ſucceſſions, its overthrow is eaſily accompliſhed: whereas in Europe, for ſome centuries paſt, every ſtate or monarchy of any tolerable extent, has gradually been waxing ſtronger and ſtronger, and is capable of greater exertions in proportion to the time that it has ſtood. Such, at leaſt, is the caſe, with regard to the middle and northern ſtates of Europe. The mode in which the government is adminiſtered will explain this, when contraſted with that which is adopted in moſt of the Aſiatic ſtates, and which exiſted in the Roman empire. In Europe the ſovereign does not intruſt the whole government and adminiſtration of affairs in a province to an individual, who is at once to be tax-gatherer, judge, and commander of the military force. On the contrary, inſtead of portioning out the whole territory of the ſtate in provinces, to be alloted to particular viceroys, a more artificial arrangement is adopted. The buſineſs to be done is divided into different branches, and theſe branches, though ſometimes extending over the whole territory, are intruſted by the ſovereign to diſtinct individuals or claſſes of individuals. Thus an office or officer is eſtabliſhed near the perſon of the prince into which the whole taxes of the nation are ultimately paid. Under this office, or its managing miniſter, a variety of tax-gatherers are ſent throughout the whole country, to collect in the different towns and diſtricts the taxes eſtabliſhed by law, and to remit them to the government. Theſe tax-gatherers have no interference in military affairs or in the adminiſtration of juſtice. In like manner, a particular claſs of perſons, properly qualified for the duty to be performed, are appointed to adminiſter juſtice in the provinces, and to interfere no farther in public affairs. No part of the revenue comes into their hands, and they have no command of the military force of the ſtate. Laſtly, the whole military or ſoldiers likewiſe form a ſeparate and diſtinct body. Their officers are all appointed by the prince and his miniſters, upon whom they immediately depend, and they have no concern in the collection of the taxes, or in the adminiſtration of juſtice. Under a government thus conſtituted, if a tax-gatherer make an unjuſt exaction from any of the people, they complain to the judges, who, having no ſhare in the management of the public revenue, and deriving no profit from the oppreſſions that may be committed in it, are diſpoſed to liſten to all complaints, and to do juſtice againſt the collectors of the taxes. The judges themſelves are kept under controul in a ſimilar way. Not being commanders of the military force, or entruſted with the direction of its operations, they can only pronounce decrees, but have no power to execute them. This muſt be performed by the military, who are a diſtinct body. They, however, will have no inclination to ſee the power of judges and lawyers exorbitantly increaſed, and will revolt from the idea of putting in force decrees which are notoriouſly unjuſt, and of which the public diſapprove. Thus the people will, in every reſpect, be aſſured of protection. The judges will protect them againſt the tax-

Aſia.

255 Why European nations improve inſtead of decaying like Aſiatic ſtates.

gatherers

Aſia. gatherers and the military, who, in their turn, will regard with jealouſy the power of the judges. In this way a juſt and equitable government is maintained. Acceſs is eaſily had to the prince, who can have no with to ſee affairs ill adminiſtered. A great nation is governed like a ſingle family, by allowing different duties to its different members, who are prevented from abuſing their power. Induſtry is encouraged by the ſecurity of property; and the human mind, unſubdued by oppreſſion, and animated by hope, is led to exert its whole energies in improving its own character and condition. Whereas in Aſia, and in all thoſe countries in which governors of provinces are appointed with abſolute power to conduct the whole buſineſs of adminiſtration, every province is converted into a ſeparate empire, in which no redreſs can be obtained for any grievance. If a tax-gatherer make an undue demand, the citizen can only ſtate his complaint to the employer of that tax-gatherer, the provincial-governor, who is to receive the money that is to be paid. If a ſoldier do wrong, he can only be complained of to the ſame governor who is the maſter and patron of the ſoldier. If a judge is unjuſt, it is ſtill to the ſame individual that the complaint muſt be carried. Thus no check or controul exiſts; and if the governor of the province is rapacious and unjuſt, and has need of unprincipled dependants to ſupport his power, the people muſt ſubmit to an oppreſſion for which there is no remedy; and the whole ſtate, thus divided into departments and oppreſſed, muſt ſpeedily ſink into ruin. Commerce cannot flouriſh where the fruits of induſtry are not ſecure; and without commerce thoſe arts cannot proſper, the practice and improvement of which afford ſome of the beſt means of enlarging the human faculties."

256 Religions of Aſia hurtful. In many parts of Aſia, religion is alſo a great ſource of national weakneſs. This ariſes from two cauſes, either from its dividing a ſtate into different parties, or from its doctrines being of ſuch a nature as to reſtrain in too great a degree the activity and improvement of the human mind.

257 Religion in ſome places divides the ſtate. Before the Turks ſubdued the Greek empire, they had been long enough ſettled in the countries near the Caſpian ſea, to acquire the religion of a more civilized people. By the time they ſubdued the country round Conſtantinople, and at laſt the capital itſelf, they were become zealous Mahometans; whilſt the nation over whom they eſtabliſhed their dominion, conſiſted of no leſs zealous Chriſtians. Hence a line of ſeparation was drawn between the conquerors and the conquered, which time has not been able to obliterate. One half of the ſtate conſiſts of maſters, and the other of an oppreſſed people. In other nations the evils of conqueſt have been temporary, becauſe in a ſhort time the victors and the vanquiſhed, mingling in the ties of affinity and thence of conſanguinity, have ceaſed to be diſtinguiſhed from each other, and have coaleſced into one common people. But in Turkey, to this day, the proud invader is known from the vanquiſhed native. Their reſpective religions have fixed upon each of them a mark, which has proved as indelible as that by which, in our Weſt India iſlands, nature diſtinguiſhes the negro ſlave from his European maſter. Hence the Turks continue to act the part of inſolent oppreſſors to their ſubjects, the Greeks; while the latter, accuſtomed to inſults and to a ſtate of reſtraint, have acquired the character of ſlaves, hypocrites and cowardice. It is not wonderful, therefore, that the Turkiſh empire ſhould decay. It not only labours under all the evils attending upon the law of primogeniture, and of a government by viceroys called *pachas*; but to them have been added an intolerant diviſion among the people, which degrades the character of one half of the nation, without conferring any improvement upon the other. The ſame evil has exiſted during many centuries in Hindooſtan. Before the conqueſt of it by the Mogul or Tartar princes, they had alſo embraced the Mahometan faith. Their new ſubjects, however, the Hindoos, adhered to the religion of their anceſtors, with ſtill more obſtinacy than the Greek Chriſtians have done againſt the Turks, and the reſult has been ſimilar. The Mahometan conquerors, with all the advantages on their ſide, of victory, of public employment, and royal favour, never amounted to above one-tenth of the population of the country. The great body of the people, therefore, neceſſarily ſunk into a contemptible and degraded condition, which impaired the national ſtrength, and retained ſociety in a violent and unnatural ſtate in which it could not flouriſh.

258 Hurtful religious doctrines. We can ſcarcely conſider as religious ſyſtems the ſuperſtitions of the Siberians and Tartars, or other rude Aſiatic tribes. Leaving them out of view, therefore, the religions of Aſia are chiefly three: that of Budho, Gaudma, or Fo, which prevails in Ceylon, the farther peninſula of India, China, Japan, and Thibet; the Mahometan religion, which, beſides Arabia, is in poſſeſſion of Turkey, Perſia, and partly of Hindooſtan; and, laſtly, the Gentoo faith, which is adhered to by ninety millions of people in India. Of theſe, the religion of Budho, Gaudma, or Fo, ſeems the leaſt pernicious. It is loaded with few ceremonies, ſo that it cannot greatly occupy the human mind. It is perfectly tolerant, and thus does not poſitively prohibit intellectual improvement; and its prieſts are men who voluntarily chooſe their profeſſion, and, excepting in the ſterile country of Thibet, have no interference in the ordinary buſineſs of life, and no ſhare in the adminiſtration of public affairs. All error is, however injurious to the human intellect, by diminiſhing its power of diſcerning truth. Even independent of this general circumſtance, the religion of Gaudma has been dangerous in another point of view. It has a book which is of ſacred authority, and believed to be the work of inſpiration. That book is ſaid to regulate minutely the ordinary affairs of life; the taxes to be paid to the ſtate, and what ought to be accounted juſt and unjuſt in the common tranſactions of men: But an infallible law for the regulation of ordinary affairs is always a great evil, as it renders error and ill government perpetual. Such a book, at the time when it was written, might perhaps be a uſeful work, containing many valuable maxims and rules for adjuſting all kinds of buſineſs, and for the deciſion of all diſputes: but human affairs, to proceed well, muſt be in a ſtate of improvement, that is, in a ſtate of change to what is better: But ſuch a book is a ſtanding law to oblige the nation that adopts it to ſtand ſtill, and conſequently to fall behind other nations. Hence they have all the

259 Religion of Budho.

Aſia.

chances of falling back into barbariſm that affect other nations, while there exiſts no poſſibility of their advancing farther in improvement.

260 Mahometan religion.

The Mahometan law has this ſpeculative advantage over that of Gaudma or Budho, that it ſuffers not the ſupreme Intelligence to be likened to a ſtock or a ſtone; but its practical character is much more injurious to the world. It not only has an infallible book, which in the countries where it is adopted is regarded as the law of the land for regulating the deciſion of controverted cauſes in all courts of juſtice, but enjoins to its followers the obſervance of a number of daily ceremonies, conſiſting of prayers and waſhings at ſtated intervals, which tend to fix down ſuperſtition upon the human mind. In addition to theſe, its extreme intolerance has a tendency to render the intellectual improvement of the people that have once adopted it extremely difficult, while the ſanction that it gives to the law of polygamy, at once places private ſociety on a defective footing, and enſures the bad government of the ſtate.

261 Gentoo religion.

The moſt pernicious of all the religions of Aſia, however, appears to be the Gentoo ſuperſtition, or the religion of the natives of Hindooſtan. It does not indeed authorize polygamy, nor does it ſanction the perſecution of thoſe who believe in other religions; but in every other reſpect, it is moſt evidently ruinous to the vigour of the human character. It fills the mind with all the idle tales and ſuperſtitions of an abſurd polytheiſm. It enjoins an endleſs variety of rites and purifications; and under its influence a morſel of bread cannot be eaten, or a cup of water taſted, without the utmoſt caution, that it have not come into contact with impure hands or impure veſſels. The diviſion of the people into hereditary caſts, of different degrees of dignity according to their reſpective employments, none of which caſts can intermarry, or even eat or drink together, completely inſulates every claſs of inhabitants; and by fixing them down to hereditary occupations, prevents every exertion of talents beyond the ſphere in which individuals happen to be born. Religion, or ſuperſtitious fear of offending againſt the rules of his caſt, conſtantly occupies and abſorbs the whole mind and faculties of a Hindoo, ſo as utterly to deprive him of intellectual vigour or courage to inveſtigate the foundations of the notions which place under controul every ſtep of his life. A people thus divided can poſſeſs little united ſtrength or energy as a nation, and the feebleneſs even of their bodily exertions may well ſuggeſt the queſtion, Whether ſuperſtitious fear and intellectual imbecility fixed down upon a people during a courſe of ages, has not a tendency to diminiſh the corporeal powers, and to render the body as feeble as the mind? In juſtice to the religion of the Hindoos, however, it may be obſerved, that if it prevent the nation from acquiring great power, it alſo guards its civilization, or the arts that it poſſeſſes, from being entirely loſt in conſequence of conqueſts by barbarians. Every Hindoo being bound by his religion to follow the occupation of his father, if a whole caſt is not utterly exterminated, the arts which were underſtood by its members cannot be loſt. They are immediately practiſed anew; they come to be in requeſt, and the caſt is employed by ſociety, and multiplied as before.

That we may not appear, however, from a love of ſyſtem, altogether to deny the effect of phyſical cauſes upon the hiſtory of the civilized nations of Aſia, we ſhall acknowledge, that the fertility of the ſoil in theſe countries in all probability aſſiſts the tendency to negligence of management which appears in their governments. In the more barren regions of Europe, it is abſolutely neceſſary that a government act with a conſiderable degree of caution, and adminiſter juſtice well, to enable a nation to attain to any tolerable ſhare of power or proſperity. With us, man has many imperious wants, which muſt be ſupplied before an individual can contribute any thing to the public. He muſt at leaſt have food, which can only be extorted from an ungrateful ſoil by patient and ſkilful induſtry. He muſt alſo have clothes and fuel. The fertility of the Aſiatic ſoil enables man to obtain food with leſs labour than in Europe, while the mildneſs of the climate ſubjects him to little expence on account of fuel and clothing. Hence in theſe countries a much leſs degree of induſtry is neceſſary for the ſupport of individuals, and to enable them to contribute ſomething towards the public revenue. Governments, therefore, are not ſo ſoon brought under the neceſſity of repairing their own errors. Abuſes are more readily allowed to multiply, and at laſt can be got quit of with greater difficulty. Add to this, that in a country whoſe inhabitants could not originally ſubſiſt without the exertion of much induſtry, a more vigorous character is apt to diffuſe itſelf among the people, than in thoſe nations upon whom, in their rude ſtate, the ſlighteſt effort of labour conferred abundance, and who have only come to find good management and induſtry requiſite, in conſequence of the great multiplication of their numbers.

Aſia.

262 Influence of phyſical cauſes on civilized nations.

263 Arabian conqueſt.

Beſides the revolutions occaſioned by Tartar invaſions, ſeveral of the nations of Aſia experienced a great revolution from the arms of another barbarous race of men, the inhabitants of the peninſula of Arabia. Similar cauſes to thoſe which have repeatedly given victory to the Tartars, enabled the Arabians to vanquiſh the neighbouring nations. They alſo exiſt in a paſtoral ſtate, and are divided into tribes or families. The Arabians, however, have not been accuſtomed to conqueſt like the Tartars. Arabia is of trifling extent, when compared to Tartary and its dependencies; its ſtrength being leſs, it is leſs likely to be engaged in diſtant enterpriſes. Unlike to Tartary, it has always poſſeſſed ſome cities, and a part of the people have connected themſelves with the arts and the commerce of the civilized nations around them. Hence ſomething more was neceſſary to rouſe the Arabian nation, and to unite its members in one common enterpriſe, than the mere love of dominion. The Arabs became conquerors, only becauſe Mahomet was ſucceſsful in rendering them fanatics; and they ſubdued the earth, not ſo much from a deſire to poſſeſs its riches and its luxuries, as from a zeal to extend the glory of God, and to give the means of ſalvation to mankind. When their religion had prevailed in all directions, and other nations adopted the ſame ſpirit and cauſe, the Arabians relapſed into their original unimportance, and ceaſed to be dangerous to the peace of the world.

Of late ſome of the nations of Aſia have undergone ſubjugation,

ASIA
EUROPEAN
TURKEY
Black Sea
ANATOLIA
Caspian Sea
TURCOMANIA
GEORGIA
CIRCASSIA
Mediterranean Sea
PERSIA
ARABIA
RED SEA
ARABIAN SEA
INDIA
Bombay
Calcutta
BAY OF BENGAL
Madras
Cape Comorin
Maldive Islands
Ceylon
Cape Rasas
Mosambique
EQUATOR
INDIAN OCEAN
Diego Rages
I. Gama
Brothers
Gerrish I.
Gandu I.
Diego Garcia
Pelew I.
Amsterdam I.
Kerguelen I.
Nuyts Land
Swan River
Van Diemens Land
Recherche Archipelago
Bass Strait
Port Jackson
New South Wales
Tropic of Capricorn
Tropic of Cancer
TARTARY
Great Desart of Gobi or Shamo
WESTERN TARTARY
EASTERN TARTARY
MONGOLS alias KALKAS
KALMUCS
KITTYANS
CASHGUR
LITTLE THIBET
THIBET
HINDOOSTAN
CHINA
Pekin
Nanking
Canton
Macao
Formosa
Hainan
Gulf of Siam
Cochin China
Tonquin
Ava
Pegu
Siam
Malacca
Sumatra
Java
Borneo
Celebes
Celebes Sea
China Sea
Philippine Islands
Manilla
Luconia
Mindoro
Panay
Mindanao
Pelew Islands
Ladrone or Marian Islands
Carolinas
Japan
Sea of Japan
Kurile Isles
Sea of Ochotsk
Kamtschatka
Behrings I.
Aleutian Isles
Lake of Aral
Caspian Sea
Black Sea
Mediterranean Sea
Red Sea
Persian Gulf
Arabian Sea
Bay of Bengal
Indian Ocean
Pacific Ocean
Arctic Ocean
New Ireland
New Britain
Louisiade
Admiralty Is.
Solomon Is.
Marquesas Is.
Society Is.
Friendly Is.
Navigators Is.
Sandwich Is.
Christmas Is.
Keelings Is.
Amsterdam I.
Kerguelen I.
Nuyts Land
Swan River
Van Diemens Land
Recherche Archipelago
Bass Strait
Port Jackson
New South Wales

Afia. 264 European conquefts.

fubjugation, and others have been threatened with it not from the ordinary quarter of Tartary, or from any other race of barbarians, but from the enterprifes of of the civilized nations of Europe. This new peril has originated from feveral caufes. The difcovery of the mariners compafs, and the improvements which have occurred in navigation, have brought the nations of Afia, as it were, nearer to thofe of this north weft corner of the globe, and expofed them in a greater degree to their attacks. The nations of Europe, alfo from their better government, and from a religion which prohibits polygamy, and which, at leaft in the proteftant ftates, interferes little in the affairs of this world, and confers no dominion upon its prieſts, have of late been enabled to make a more rapid progrefs in the improvement of every art, than was ever formerly done, and among the reft they have improved the terrible art of war. In the mean time, the civilized nations of Afia have been either ftanding ftill as ufual, fatisfied with their allotted meafure of intelligence, or they have been going backward. Thus the relative ftrength of thefe two quarters of the world has been greatly altered, and fhould any remarkable additional improvement in the art of navigation be foon made, it is probable that all Afia will be enflaved by the European nations. Should fuch an event take place, its firft confequences will probably prove unfortunate. Europe will be corrupted, while Afia will not be reformed. Its imperfect governments, however, and its falfe religions, will be broken up. The fuperiority of the human character in European countries is fo great, and the population of North America is increafing fo rapidly, carrying the purfuits of fcience and the practice of the arts in its train, that there is little doubt the race of Europe muft in a few centuries obtain the dominion of the earth. A new era, therefore, is commencing for Afia, the events of which cannot be foreſeen. From the fhort review, however, which we have taken of that great continent, we perceive, and we perceive with fatisfaction, that the moft beautiful regions of this globe are by no means unfit, as was fuppofed, for the production of a vigorous and active race of men. The Hindoo is timid and feeble; but it is not his climate which renders him fo. In the fame climate with Hindooftan, and fcarcely divided from it, a vigorous race of men has been found to exift, forming a rifing people, eager to emulate the career of civilized and powerful nations. It is the religion of the Hindoo, therefore, that is the caufe of his weaknefs, as the government of China is the caufe of the ftationary character of its people. Were thefe caufes of feeblenefs removed, and above all were the art of printing diffufed, the nations of the earth would probably by degrees approach nearer to a fimilarity of mind and talents, than they have hitherto been accounted capable of doing. Even Siberia itfelf, by the great tracts of fertile land which attention to its inland navigation is capable of laying open, may one day contribute to the general ftock of human power and riches. It ought never to be forgotten that this globe is given as a valuable domain or poffeffion to the human race, only in proportion to the degree in which they fubdue its native wildnefs or fterility; and it becomes a fit and falubrious habitation for them, according to the degree in which it is improved by cultivation. The rein-deer once wandered in the foreſts of Germany. It cannot now live upon the fhores of the Baltic, and is forced to look a remote fubfiftence and for its conftitution, within the polar circle and in the neighbourhood of the Icy fea. The progrefs of civilization and of agriculture have accomplifhed this change in the climate of the north of Europe, and the defcendants of Europeans may probably accomplifh ſtill greater alterations upon the north of Afia.

265 Profpect of the deſtiny of Afia.

Afia Minor

Afia Minor, or *Lefſer Afia*; the fame with Natolia. See Natolia.

ASIARCHÆ, (termed by St Paul, *Chiefs of Afia*, Acts xix. 31.) were the Pagan pontiffs of Afia, chofen to fuperintend and have the care of the public games, which they did at their own expence: for which reafon they were always the richeſt and moſt conſiderable men of the community.

ASIDE, in the drama, fomething faid by an actor, which fome, or even all the other actors preſent are fuppofed not to hear; a circumftance juſtly condemned as being unnatural and improbable.

ASIITO, a town of Italy, in Perugia, and in the Pope's territories. E. Long. 23. 40. N. Lat. 43. 0.

ASILUS, or Hornet-fly. See Entomology *Index*.

ASINARA, an iſland of Italy, on the weſtern coaſt of Sardinia. E. Long. 8. 30. N. Lat. 41. 0.

ASINIUS Pollio, a Roman conſul and orator, diſtinguiſhed himſelf under Auguſtus by his exploits and his literary works. He is frequently mentioned with praiſes by Horace and Virgil, and is ſaid to have collected the firſt library at Rome. He died at Freſcati, at 80 years of age.

ASIONGABER, Esiongeber, or Eziongeber, a town of Arabia Petræa, on the bay of Elath, a part of the Arabian gulf: the dock or ſtation for the ſhips of Solomon and Jehoſhaphat: an ancient town, mentioned alſo by Moſes. It was afterwards called *Berenice* (Joſephus).

ASISIA, or Assisia, a town of Liburnia (Ptolemy, Antonine), now in ruins, but exhibiting many monuments of antiquity. It is the Aſſeſia or Aſſeria of Pliny. This author, after having ſpecified the Liburnian cities that were obliged to attend the congreſs or diet of Scardona, adds to the catalogue the free Aſſerians, *immuneſque Aſſeriates;* and this people, who created their own magiſtrates, and were governed by their own municipal laws, were no doubt more rich and powerful than their neighbours.

The veſtiges of the walls of Aſſeria that ſtill remain, are a ſufficient proof of this; for their circumference is clearly diſtinguiſhable above ground, and meaſures 3600 Roman feet. The ſpace encloſed by them forms an oblong polygon, and they are built with common Dalmatian marble; but not taken from the hill on which they ſtand, for that furniſhes only ſoft ſtone. The walls are inveſted, both inſide and out, with this marble: ſome of the ſtones are ten feet long, and they are all of conſiderable dimenſions. The thickneſs of theſe fortifications is commonly about eight feet: but at the narroweſt extremity, which falls towards the foot of the hill, they are eleven feet thick: and, in ſome parts, their height ſtill above ground reaches to near 30 feet. An antiquary, or even a ſimple lover of the fine arts, or of erudition, the Abbé Fortis [illegible] cannot help wiſhing at Podgraie [illegible] Aſſeria).

Aſna. Aſſeria), that ſome powerful hand *quicquid ſub terra eſt in apertum proferit:* and ſuch a wiſh becomes ſtronger when he reflects, that ſince the deſtruction of that city no ſearch has ever been made under ground, with a view to diſcover any thing curious; and yet theſe walls without doubt enclofe a valuable depoſite of antiquities, thrown down in heaps, who knows by what cauſe; perhaps naturally, by an earthquake, or perhaps by a ſudden inundation of barbarians, which is ſtill worſe. The gate now demoliſhed, the conſiderable height of the walls to be ſeen in ſeveral places from without, ſome pieces of thick walls that ſtill appear levelled to the ground among the buſhes, are circumſtances which give ground to hope that many coſtly monuments might be recovered out of theſe ruins. The magnificence of the remaining wall, and the many pieces of well-cut ſtone and fine marble ſcattered over the contiguous fields, afford ſufficient proof that both good taſte and grandeur once flouriſhed in that country. In the midſt of the rubbiſh which covers the remains of Aſſeria, the pariſh church of the little village ſtands inſulated; it is built of broken pieces of ancient ruins, taken as they happened to be neareſt, mixed with mutilated inſcriptions and fragments of noble cornices.

ASISIO, or ASITIO, a city of the pope's territories in Italy, ſituated about 16 miles eaſt of Perugia. E. Long. 13. 35. N. Lat. 43.

ASKELON. See ASCALON.

ASKERON, a place five miles from Doncaſter, noted for a medicinal ſpring. It is a ſtrong ſulphureous water, and is ſlightly impregnated with a purging ſalt. It is recommended internally and externally in ſtrumous and other ulcers, ſcabs, leproſy, and ſimilar complaints. It is good in chronic obſtructions, and in caſes of worms and foulneſs of the bowels.

ASKRIG, a town in the north riding of Yorkſhire. W. Long. 0. 5. N. Lat. 53. 50.

ASLANI, in commerce, a ſilver coin, worth from 115 to 120 aſpers. See ASPER.

ASMONEUS, or ASSAMONEUS, the father of Simon, and chief of the Aſmoneans, a family that reigned over the Jews during 126 years.

ASNA, or ESNA, a town in Upper Egypt, ſeated upon the Nile, believed by ſome authors to be the ancient Syene, though others ſay the ruins of it are ſtill to be ſeen near Aſſouan. It is ſo near the cataracts of the Nile, that they may be heard from thence. It contains ſeveral monuments of antiquity; and among the reſt an ancient Egyptian temple, pretty entire, all painted throughout, except in ſome places that are effaced by time. The columns are full of hieroglyphic figures. This ſuperb ſtructure is now made uſe of for a ſtable, wherein they put oxen, camels, and goats. A little way from thence are the ruins of an ancient nunnery, ſaid to be built by St Helena, ſurrounded with tombs.—Aſna is the principal town in theſe parts, and the inhabitants are rich in corn and cattle. They drive a conſiderable trade into Lower Egypt and Nubia, by means of the Nile, and alſo by the caravans that paſs over the deſert. The inhabitants are all Arabs, except about 200 Copts, the ancient inhabitants, and a ſort of Chriſtians. They are under the government of the Turks, who have a cadi, and the Arabs have two ſcheriffs of their own nation. E. Long. 31. 40. N. Lat. 33. 15. Aſola Aſow.

ASOLA, a town of the Breſſan in Italy, belonging to the republic of Venice. E. Long. 14. 18. N. Lat. 45. 15.

ASOSO, a town of Italy, in the Treviſan, ſeated on a mountain 17 miles north-weſt of Treviſan, and 10 north-eaſt of Baſſano. E. Long. 12. 2. N. Lat. 45. 49.

ASOPH, a town of Cuban Tartary, in Aſia, ſeated on the river Don, near its mouth, a little to the eaſt of the Palus Mæotis, or ſea of Aſoph. It has been ſeveral times taken and retaken of late years; but in 1739 the contending powers agreed that the fortifications ſhould be demoliſhed; and the town remains under the dominion of Ruſſia. E. Long. 41. 30. N. Lat. 47. 18.

ASOPUS, a river of Phrygia Major, which, together with the Lycus, waſhes Laodicea, (Pliny).—Another of Bœotia, which running from Mount Cithæron, and watering the territory of Thebes, ſeparates it from the territory of Platæa, and falls with an eaſt courſe into the Euripus, at Tanagra. On this river Adraſtus king of Sicyon built a temple to Nemeſis, thence called *Adraſteia*. From this river Thebes came to be ſurnamed *Aſopides*, (Strabo). It is now called *Aſopo*. A third Aſopus, a river of Peloponneſus, which runs by Sicyon, (Strabo); and with a north-weſt courſe falls into the Sinus Corinthiacus, to the weſt of Corinth.—A fourth, a ſmall river of the Locri Epicnemidii, on the borders of Theſſaly, (Pliny); riſing in Mount Oeta, and falling into the Sinus Maliacus.

ASOPUS, a town of Laconia, (Pauſanias); on the Sinus Laconicus, with a port in a peninſula, between Boæ to the eaſt, and the mouth of the Eurotas to the weſt. The citadel only remains ſtanding, now called by the ſailors *Caſtel Rampano*.

ASOR, or HAZOR, in *Ancient Geography*, a town of the tribe of Judah, to the ſouth-weſt, on the borders of Aſcalon, (Joſhua); as alſo Haſor-Hadata, tranſlated by the ſeventy Ασωρ Καινη (id).—Another Aſor, Aſorus, or Hazor, a town of Galilee; called the capital of all the kingdoms to the north of Paleſtine. It was taken by Joſhua; the inhabitants were put to the ſword, and their houſes burnt. It was afterwards rebuilt (Judges, 1 Sam.); but remained ſtill in the hands of the Canaanites, though in the lot of the tribe of Naphtali, (Joſhua). It lay to the north of the Lacus Samachonites, called in Scripture the *Waters of Merom* (Joſephus).

ASOW, a celebrated and important fortreſs of Ruſſia, once a place of conſiderable trade, but now demoliſhed. It was ſituated in the diſtrict of Bachmut, near the place where the Greeks many centuries ago built the city of Tanais, which was very famous for its trade, and underwent many viciſſitudes. The Genoeſe, who ſettled a trade with Ruſſia ſoon after the diſcovery of Archangel by Captain Chancellor, became maſter of this place, and gave it the name of *Tana*, or *Catana*: but the Tartars, who were very powerful in theſe parts, ſeem to have been in poſſeſſion of it long before; for, as Buſching informs us, there are Aſow coins yet extant, on which is the name of *Tucktamyſh Kan*. From the Genoeſe it fell into the hands of the Turks, loſt its

Aſp
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Aſpaſia.

its trade, and became an inconſiderable trade. In 1637, it was taken by the Coſſacks, who defended it againſt the Turks in 1641, and next year let fire to it, and blew it up. The Turks rebuilt it with ſtrong fortifications. The Ruſſians laid claim to it in 1672, and took it in 1696; but, by the treaty of Pruth in 1711, it was reſtored to the Turks. In 1736, the Ruſſians became maſters of Aſow; but by the treaty of Belgrade they were obliged to relinquiſh it, and entirely deſtroy the place.

ASP, in *Natural Hiſtory*, a ſmall poiſonous kind of ſerpent, whoſe bite gives a ſpeedy but eaſy death. It is ſaid to be thus denominated from the Greek ἀσπὶς, *ſhield*, in regard to the manner of its lying contracted in a circle, in the centre of which is the head, which it exerts, or raiſes, like the umbo or umbilicus of a buckler. This ſpecies of ſerpent is very frequently mentioned by authors; but ſo carelefsly determined, that it is not eaſy to determine which, if any of the ſpecies known at preſent, may properly be called by this name. It is ſaid to be common in Africa, and about the banks of the Nile; and Belonius mentions a ſmall ſpecies of ſerpent which he had met with in Italy, and which had a ſort of callous excreſcence on the forehead, which he takes to have been the aſpis of the ancients. It is with the aſp that Cleopatra is ſaid to have deſtroyed herſelf, and prevented the deſigns of Auguſtus, who intended to have carried her captive to adorn his triumphal entry into Rome. But the fact is conteſted: Brown places it among his vulgar errors. The indications of that queen's having uſed the miniſtry of the aſp, were only two almoſt inſenſible pricks found in her arm; and Plutarch ſays it is unknown what ſhe died of. At the ſame time, it muſt be obſerved that the ſlightneſs of the pricks found in her arm furniſhes no preſumption againſt the fact; for no more than the prick of a needle point dipt in the poiſon was neceſſary for the purpoſe.

Lord Bacon makes the aſp the leaſt painful of all the inſtruments of death. He ſuppoſes it to have an affinity to opium, but to be leſs diſagreeable in its operation; and his opinion ſeems to correſpond with the accounts of moſt writers, as well as with the effects deſcribed to have been produced upon Cleopatra.

The ancients had a platter called δι' Ἀσπίδων, made of this terrible animal, of great efficacy as a diſcutient of ſtrumæ and other indurations, and uſed likewiſe againſt pains of the gout. The fleſh, and ſkin or exuviæ, of the creature, had alſo their ſhare in the ancient materia medica.

ASPA, a town of Parthia, (Ptolemy), now *Iſpahan*, (Hoffenius). In Ptolemy the latitude ſeems to agree, being 33°; but whether the longitude does, is a queſtion. E. Long. 51. Lat. 32. 30.

ASPALATHUS, African broom. See Botany *Index*.

ASPARAGUS, Sparagus, or Sparrow-grass. See Botany *Index*.

ASPASIA of Miletus, a courteſan who ſettled at Athens under the adminiſtration of Pericles, and one of the moſt noted ladies of antiquity. She was of admirable beauty: yet her wit and eloquence, ſtill more than her beauty, gained her extraordinary reputation among all ranks in the republic. In eloquence ſhe ſurpaſſed all her contemporaries; and her converſation was ſo entertaining and inſtructive, that notwithſtanding the diſhonourable commerce ſhe carried on in female [illegible] virtue, perſons of the firſt diſtinction, male and female, reſorted to her houſe as to an academy. The even numbered Socrates among her hearers and admirers. She captivated Pericles in ſuch a manner, that he divorced his own wife, in order to eſpouſe her; and, by her univerſal knowledge, irreſiſtible elocution, and intriguing genius, ſhe in a great meaſure influenced the adminiſtration of Athens. She was accuſed of having excited, from motives of perſonal reſentment, the war of Peloponneſus; yet, calamitous as that long and cruel war conſidered proved to Greece, and particularly to Athens, it may be expected that Aſpaſia occaſioned ſtill more incurable evils to both. Her example, and her inſtructions, formed a ſchool at Athens, by which her dangerous profeſſion was reduced into art. The companions of Aſpaſia ſerved as models for painting and ſtatuary, and themes for poetry and panegyric. Nor were they merely the objects, but the authors of many literary works, in which they eſtabliſhed rules for the behaviour of their lovers, particularly at table; and explained the art of gaining the heart and captivating the affections. The dreſs, behaviour, and manners of this claſs of women, became continually more bold, live and dangerous; and [illegible] thenceforth remained the chief ſchool of vice and pleaſure, as well as of literature and philoſophy.

ASPASTICUM, (from ἀσπάζομαι I [illegible]) in eccleſiaſtical writers, a place, or [illegible], belonging to the ancient churches, wherein the catechumens and neophytes ſat, to receive the ſalutations of the faithful who came to viſit them, deſire their bleſſing, or conſult them on buſineſs.—This is alſo called *apotheca diaconicum, receptorium, metatorium*, or *meſatorium*, and *ſolutatorium*: in Engliſh, "greeting-place."

ASPECT, in *Aſtronomy*, denotes the ſituation of the planets and ſtars with reſpect to each other.

There are five different aſpects. 1. Sextile aſpect is when the planets or ſtars are 60° diſtant and marked thus ⚹. 2. The quartile, or quadrate, when they are 90° diſtant, marked □. 3. Trine, when 120° diſtant, marked △. 4. Oppoſition, when 180° diſtant, marked ☍. And, 5. Conjunction, when both in the ſame degree, marked ☌.

Kepler, who added eight new ones, defines aſpect to be the angle formed by the rays of two ſtars meeting on the earth, whereby their good or bad influence is meaſured: for it is to be obſerved, that theſe aſpects being firſt introduced by aſtrologers, were diſtinguiſhed into benign, malignant, and indifferent; the quartile and oppoſition being accounted malign; the trine and ſextile, benign or friendly; and the conjunction, indifferent.

ASPEN tree. See Populus, Botany *Index*.

ASPER, in *Grammar*, an accent peculiar to the Greek language, marked thus (῾); and importing that the letters over which it is placed ought to be ſtrongly aſpirated, or pronounced as if an *h* were joined with them.

Asper, or *Aſprè*, in commerce, a Turkiſh coin, three of which make a Medine.

ASPERIA arteria, in *Anatomy*, the ſame with the windpipe or trachea. See Anatomy *Index*.

ASPERIFOLIATE, or Asperifolious, among *Botaniſts*, ſuch plants as are rough-leaved, having their [illegible]

Aſperifoliæ leaves placed alternately on their ſtalks, and a mono-
Aſphaltites. petalous flower divided into five parts.—They conſti-
tute an order of plants in the *Fragmenta methodi naturalis* of Linnæus, in which are theſe genera, viz. tournefortia, cerinthe, ſymphytum, pulmonaria, anchuſa, lithoſpermum, myoſotis heliotropium, cynoglossum, aſperugo, lycopſis, echium, borrago: *magis minuſve oleraceæ, mucilaginoſæ, et glutinoſæ ſunt.* Lin. In the preſent ſyſtem, theſe are among the pentandria monogynia.

ASPERIFOLIÆ PLANTÆ, rough-leaved plants; the name of a claſs in Hermannus, Boerhaave, and Ray's methods, conſiſting of plants which have four naked ſeeds, and whoſe leaves are rough to the touch.

In Tournefort's Syſtem, theſe plants conſtitute the third ſection or order of the ſecond claſs; and in Linnæus's Sexual Method, they make part of the pentandria monogynia.

ASPERITY, the inequality of the ſurface of any body, which hinders the hand from paſſing over it freely.—From the teſtimony of ſome blind perſons, it has been ſuppoſed that every colour hath its particular degree of aſperity: though this has been denied by others. See the article BLIND.

ASPEROSA, a town of Turkey in Europe; it is a biſhop's ſee, ſituated on the coaſt of the Archipelago. E. Long. 25. 20. N. Lat. 40. 58.

ASPERUGO, SMALL WILD BUGLOSS. See BOTANY *Index*.

ASPERULA, WOODROOF. See BOTANY *Index*.

ASPHALTITES, ſo called from the great quantity of bitumen it produces; called alſo the *Dead ſea*; and from its ſituation, the *Eaſt ſea*; the *Salt ſea*, the *ſea of Sodom*, the *ſea of the Deſert*, and the *ſea of the Plain*, in the ſacred writings: A lake of Judea.

Many things have been ſaid and written of this famed, or, if they were indeed true, rather infamous lake; ſuch as that it aroſe from the ſubmerſion of the vale of Siddim, where once ſtood, as is commonly reported, the three cities which periſhed in the miraculous conflagration, with thoſe of Sodom and Gomorrah, for their unnatural and deteſtable wickedneſs: on which account this lake has been looked upon as a laſting monument of the juſt judgment of God, to deter mankind from ſuch abominations. Hence it is added, that the waters of the lake are ſo impregnated with ſalt, ſulphur, and other bituminous ſtuff, that nothing will ſink or live in it; and that it caſts ſuch ſtench and ſmoke, that the very birds die in attempting to fly over it. The deſcription likewiſe of the apples that grew about it, fair without, and only aſhes and bitterneſs within, were looked upon as a farther monument of God's anger. So likewiſe the deſcription which many travellers give not only of the lake, but of all the country round about, of the whole appearing dreadful to behold, all ſulphureous, bituminous, ſtinking, and ſuffocating: and laſtly, what hath been farther affirmed of the ruins of the five cities being ſtill to be ſeen in clear weather, and having been actually ſeen in theſe latter times; all theſe ſurpriſing things, and ill-grounded notions, though commonly, and ſo long, received among Chriſtians, have been of late ſo much exploded, not only by the teſtimony of very credible witneſſes, but even by arguments drawn from Scripture, that we muſt give them up as inventions, unleſs we will ſuppoſe the face and nature of all theſe things to have been entirely changed. Aſphaltites.

Thoſe, in particular, of bodies not ſinking in the water, and of birds being ſtifled by the exhalations of it, appear now falſe in fact. It is true, the quantity of ſalt, alum, and ſulphur, with which it is impregnated, render it ſo much ſpecifically heavier (Dr Pococke ſays one-fifth) than freſh water, that bodies will not ſo eaſily ſink: yet that author, and others, aſſure us, they have ſwam and dived in it; and, as to the birds, we are told likewiſe, that they will fly over it without any harm. To reconcile theſe things with the experiments which Pliny* tells us had been made by Veſpaſian, is impoſſible, without ſuppoſing that thoſe ingredients have been ſince much exhauſted, which is not at all improbable; ſuch quantities of them, that is, of the bitumen and ſalt, having been all along, and being ſtill taken off, and ſuch ſtreams of freſh water continually pouring into it, as may reaſonably be ſuppoſed to have conſiderably diminiſhed its gravity and denſeneſs. For, with reſpect to its ſalt, we are told, the Arabs make quantities of it from that lake, in large pits about the ſhore, which they fill with that water, and leave to be cryſtallized by the ſun. This ſalt is in ſome caſes much commended by Galen, as very wholeſome, and a ſtrengthener of the ſtomach, &c. on account of its unpleaſant bitterneſs. * *Nat. Hiſt.* lib. v. cap. 15.

What likewiſe relates to the conſtant ſmoke aſcending from the lake, its changing the colour of its water three times a-day, ſo confidently affirmed by Joſephus† and other ancients, and confirmed by Prince Radziville and other moderns, who pretend to have been eye-witneſſes of it, is all now in the ſame manner exploded by authors of more modern date, and of at leaſt equal candour. The unhealthineſs of the air about the lake was affirmed by Joſephus and Pliny, eſpecially on the weſt: the monks that live in the neighbourhood confirm the ſame, and would have diſſuaded Dr Pococke from going to it on that account; and, as he ventured to go and bathe in it, and was two days after, ſeized with a dizzineſs, and violent pain in the ſtomach, which laſted near three weeks, they made no doubt but it was occaſioned by it; and he doth not ſeem to contradict them. As to the water, it is, though clear, ſo impregnated with ſalt, that thoſe who dive into it come out covered with a kind of ſaline matter. There is one remarkable thing relating to this lake, generally agreed on by all travellers and geographers, viz. that it receives the waters of Jordan, a conſiderable river, the brooks of Jabbok, Kiſhon, Arnon, and other ſprings, which flow into it from the adjacent mountains, and yet never overflows, though there is no viſible way to be found by which it diſcharges that great influx. Some naturaliſts have been greatly embarraſſed to find a diſcharge for theſe waters; and have therefore been inclined to ſuſpect the lake had a communication with the Mediterranean. But, beſides that we know of no gulf to corroborate this ſuppoſition, it has been demonſtrated, by accurate calculation, that evaporation is more than ſufficient to carry off the waters brought by the river. It is, in fact, very conſiderable; and frequently becomes ſenſible to the eye, by the fogs with which the lake is covered at the riſing of the ſun, and which are afterwards diſperſed by the heat. It is incloſed on the eaſt and weſt with exceeding high mountains, many of them craggy and dreadful to behold. † *Bell. Jud.* lib. v. cap. 5.

Asphaltites. hold. On the north it has the plain of Jericho: or, if we take in both ſides of the Jordan, it has the Great Plain, properly ſo called, on the ſouth; which is open, and extends beyond the reach of the eye. Joſephus gives this lake 580 furlongs in length, from the mouth of the Jordan to the town of Segor, on the oppoſite end, that is about 22 leagues; and about 150 furlongs or 5 leagues, in its greateſt breadth; but our modern accounts commonly give it 24 leagues in length, and 6 or 7 in breadth. On the weſt ſide of it is a kind of promontory, where they pretend to ſhow the remains of Lot's metamorpholed wife. Joſephus ſays, it was ſtill ſtanding in his time; but when Prince Radziville inquired after it, they told him there was no ſuch ſalt pillar or ſtatue to be found in all that part. However, they have found means, about a century after him, to recover, as they pretended to aſſure Mr Maundrell, a block or ſtump of it, which may in time grow up, with a little art, into its ancient bulk.

It is to be obſerved here, that the name of *Dead ſea* is not to be found in the ſacred writings; but hath been given to this lake becauſe no creature will live in it, on account of its exceſſive ſaltneſs, or rather bituminous quality; for the Hebrews rank ſulphur, nitre, and bitumen, under the general name of *ſalt*. However, ſome late travellers have found cauſe to ſuſpect the common report of its breeding no living creature; one of them having obſerved, on the ſhore, two or three ſhells of fiſh like thoſe of an oyſter, and which he ſuppoſes to have been thrown up by the waves, at two miles diſtance from the mouth of the Jordan, which he there takes notice of, leſt they ſhould be ſuſpected to have been brought into the lake by that way. And Dr Pococke, though he neither ſaw fiſh nor ſhells, tells us, on the authority of a monk, that ſome ſort of fiſh had been caught in it; and gives us his opinion, that as ſo many ſorts live in ſalt water, ſome kind may be ſo formed as to live in a bituminous one. Mr Volney, however, affirms that it contains neither animal nor vegetable life. We ſee no verdure on its banks, nor are fiſh to be found within its waters. But he adds, that it is not true that its exhalations are peſtiferous, ſo as to deſtroy birds flying over it. "It is very common (ſays he) to ſee ſwallows ſkimming its ſurface, and dipping for the water neceſſary to build their neſts. The real cauſe which deprives it of vegetables and animals is the extreme ſaltneſs of the water, which is infinitely ſtronger than that of the ſea. The ſoil around it, equally impregnated with this ſalt, produces no plants; and the air itſelf, which becomes loaded with it from evaporation, and which receives alſo the ſulphureous and bituminous vapours, cannot be favourable to vegetation: hence the deadly aſpect which reigns around this lake. In other reſpects, the ground about it, however, is not marſhy; and its waters are limpid and incorruptible, as muſt be the caſe with a diſſolution of ſalt. The origin of this mineral is eaſy to be diſcovered; for on the ſouth-weſt ſhore are mines of foſſil ſalt, of which I have brought away ſeveral ſpecimens. They are ſituated in the ſide of the mountains which extend along that border; and, from time immemorial, have ſupplied the neighbouring Arabs, and even the city of Jeruſalem. We find alſo on this ſhore fragments of ſulphur and bitumen, which the Arabs convert into a trifling article of commerce; as alſo hot fountains, and deep crevices, which are diſcovered at a diſtance by little pyramids built on the brink of them. We likewiſe find a ſort of ſtone, which, on rubbing, emits a noxious ſmell, burns like bitumen, receives a poliſh like white alabaſter, and is uſed for the paving of court yards. At intervals, we alſo meet with unſhapen blocks, which prejudiced eyes miſtake for mutilated ſtatues, and which paſs with ignorant and ſuperſtitious pilgrims for monuments of the adventure of Lot's wife, though it is nowhere ſaid ſhe was metamorphoſed into ſtone like Niobe, but into ſalt, which muſt have melted the enſuing winter."

Aſphaltites, or Lake of.

It is on account of this bitumen that it hath had the name of *Aſphaltite lake*, it being reported to have thrown up great quantities of that drug, which was much in uſe among the Egyptions, and other nations, for embalming of dead bodies. Joſephus aſſures us, that in his days it roſe in lumps as big as an ox without its head, and ſome even larger. But whatever it may have formerly done, we are aſſured by Mr Maundrell and others, that it is now to be found but in ſmall quantities along the ſhore, though in much greater near the mountains on both ſides the lake. But the contrary is ſince affirmed by two or more late * travellers; one of whom tells us, that it is obſerved to float on the ſurface of the water, and to come on the ſhore after windy weather, where the Arabians gather it, and put it to all the uſes that common pitch is uſed for, even in the compoſition of ſome medicines; and another † tells us, he was there informed, that it was raiſed at certain times from the bottom, in large hemiſpheres, which, as ſoon as they touch the ſurface, and are acted upon by the external air, burſt at once, with great noiſe and ſmoke, like the *pulvis fulminans* of the chemiſts, diſperſing themſelves about in a thouſand pieces. From both theſe judicious authors we may conclude the reaſon of Mr Maundrell's miſtake, both as to the lake's throwing it up only on certain ſeaſons (that reverend gentleman might chance to be there at the wrong time); and likewiſe as to his not obſerving it about the ſhores, ſeeing the Arabs are there ready to gather it as ſoon as thrown up: all of them deſcribe it as reſembling our black pitch, ſo as not to be diſtinguiſhed from it but by its ſulphureous ſmoke and ſtench when ſet on fire; and it hath been commonly thought to be the ſame with that which our druggiſts ſell under the name of *bitumen Judaicum*, or *Jewiſh pitch*, though we have reaſon to think that this laſt is factitious, and that there is now none of the right aſphaltum brought from Judea.

* *Pococke's Travels*, p. 56.

† *Shaw's Travels*, p. 374.

It hath, moreover, been confounded with a ſort of blackiſh combuſtible ſtone thrown on the ſhore, and called by ſome *Moſes's ſtone*, which being held in the flame of a candle, will ſoon burn, and caſt a ſmoke and intolerable ſtench; but with this extraordinary property, that though it loſes much of its weight and colour, it becoming in a manner white, yet it diminiſhes nothing of its bulk. But theſe, Dr Pococke tells us, are found about two or three leagues from the ſhore. He concludes, however, from it, that a *ſtratum* of that ſtone under the lake is probably one part of the matter that feeds the ſubterraneous fire, and cauſes the bitumen to boil up out of it.

ASPHALTUM, BITUMEN JUDAICUM, or JEWS PITCH, is a light ſolid bitumen, of a duſky colour on the outſide, and a deep ſhining black within; of very

Aſphodelus
||
Aſpicueta.

little taſte; and having ſcarcely any ſmell, unleſs heated, when it emits a ſtrong pitchy one. It is found in a ſoft or liquid ſtate on the ſurface of the Dead ſea, and by age grows dry and hard. The ſame kind of bitumen is met with likewiſe in the earth, in other places of the world, in China, America, and in ſome places of Europe, as the Carpathian hills, France, Neufchatel, &c. There are ſeveral kinds of Jews pitch in the ſhops: but none of them are the genuine ſort, and have little other title to their name than their being artificially compounded by Jews; and as they are a medley of we know not what ingredients, their medicinal uſe begins to be deſervedly laid aſide, notwithſtanding the diſcutient, reſolvent, pectoral, and other virtues attributed to this bitumen by the ancients. The true aſphaltum was formerly uſed in embalming the bodies of the dead. The thick and ſolid aſphalta are at preſent employed in Egypt, Arabia, and Perſia, as pitch for ſhips; as the fluid ones, for burning in lamps, and for varniſhes. Some writers relate, that the wall of Babylon, and the temple of Jeruſalem, were cemented with bitumen inſtead of mortar. This much is certain, that a true natural bitumen, that for inſtance which is found in the diſtrict of Neufchatel, proves an excellent cement for walls, pavements, and other purpoſes, uncommonly firm, very durable in the air, and not penetrable by water. The watch and clock makers uſe a compoſition of aſphaltum, fine lamp black, and oil of ſpike or turpentine, for drawing the black figures on dial plates: this compoſition is prepared chiefly by certain perſons at Augſburg and Nuremberg. See the preceding article.

ASPHODELUS, ASPHODEL, or KING'S SPEAR: See BOTANY *Index*.

ASPHURELATA, in *Natural Hiſtory*, are ſemimetallic foſſils, fuſible by fire, and not malleable in their pureſt ſtate, being in their native ſtate intimately mixed with ſulphur and other adventitious matter, and reduced to what are called *ores*.

Of this ſeries of foſſils there are only five bodies, each of which makes a diſtinct genus; viz. antimony, biſmuth, cobalt, zinc, and quickſilver.

ASPICUETA, MARTIN DE, commonly called the Doctor of Navarre, or *Doctor Navarrus*, was deſcended of a noble family, and born the 13th of December 1491, at Varaſayn, a ſmall city of Navarre, not far from Pampeluna. He entered very young into the monaſtery of regular canons at Roncevaux, where he took the habit, which he continued to wear after he left the convent. He ſtudied claſſical learning, natural and moral philoſophy, and divinity, at Alcala, in New Caſtile, adopting chiefly the ſyſtem of Petrus Lombardus, commonly called the *Maſter of the Sentences*. He applied to the ſtudy of the law at Ferrara, and taught it with applauſe at Toulouſe and Cahors. After being firſt profeſſor of canon law at Salamanca for 14 years, he quitted that place to be profeſſor of law at Coimbra, with a larger ſalary. The duties of this office he diſcharged for the ſpace of 20 years, and then reſigned it to retire into his own country, where he took care of his nieces, the daughters of his deceaſed brothers. Having made a journey to Rome to plead the cauſe of Bartholomeo de Caranza archbiſhop of Toledo, who had been accuſed of hereſy before the tribunal of the inquiſition in Spain, and whoſe cauſe was by the Pope's order, to be tried in that city, Aſpicueta's writings, which were well known, procured him a moſt honourable reception. Pope Pius V. made him aſſiſtant to Cardinal Francis Aciat, his vice penitentiary; and Gregory XIII. never paſſed by his door without calling for him, and ſtopped ſometimes a whole hour to talk with him in the ſtreet. His name became ſo famous, that even in his lifetime the higheſt encomium on a learned man was to call him a *Navarrus*. He was conſulted as an oracle. By temperance he prolonged his life to a great length. His economy enabled him to give ſubſtantial proofs of his charity. Being very old, he uſed to ride on a mule through the city, and relieved all the poor he met; to which his mule was ſo well accuſtomed, that it ſtopped of its own accord at the ſight of every poor man till his maſter had relieved him. He refuſed ſeveral honourable poſts in church and ſtate, that he might have leiſure to correct and improve the works he had already written, and compoſe others. He died at the age of 94, on the 21ſt of June 1586. He wrote a vaſt number of treatiſes, all which are either on morality or common law.

Aſpirate
||
Aſſaſin.

ASPIRATE, in *Grammar*, denotes words marked with the ſpiritus aſper. See ASPER.

ASPIRATION, among grammarians, is uſed to denote the pronouncing a ſyllable with ſome vehemence.

ASPLENIUM, CETERACH. See BOTANY *Index*.

ASS, in *Zoology*, is ranged as a ſpecies of equus, or horſe. See MAMMALIA *Index*.

Coronation of the Aſs, in *Antiquity*, was a part of the ceremony of the feaſt of Veſta, wherein the bakers put bread crowns on the heads of theſe quadrupeds; *Ecce coronatis panis dependet aſellis* *. Hence, in an ancient calendar, the ides of June are thus denoted; *Feſtum eſt Veſtæ. Aſinus coronatur!*—This honour, it ſeems, was done the beaſt, becauſe, by its braying, it had ſaved Veſta from being raviſhed by the Lampſacan god. Hence the formula, *Veſtæ delicium eſt aſinus*. * *Ovid Faſt.* vi. 311.

ASSAI, in *Muſic*, ſignifies quick; and, according to others, that the motion of the piece be kept in a middle degree of quickneſs or ſlowneſs. As, *aſſai allegro, aſſai preſto*. See ALLEGRO and PRESTO.

ASSANCALA, a ſtrong town in Armenia, near the river Arras, in the road between Erzerum and Erivan, and noted for its hot baths. It ſtands on a high hill; the walls are built in a ſpiral line all round the rock, and ſtrengthened with ſquare towers. The ditches are about two fathoms over, cut out of hard rock. E. Long. 41. 30. N. Lat. 39. 46.

ASSANCHIF, a town of Aſia, in Diarbekir, ſeated on the river Tigris. E. Long. 42. 30. N. Lat. 37. 20.

ASSANS. See ASSENS.

ASSARIUM, in *Antiquity*, denotes a ſmall copper coin, being a part or diminutive of the *as*. The word ασσαριον is uſed by Suidas indifferently with οβολος and νομισμα, to denote a ſmall piece of money; in which he is followed by Cujacius, who defines ασσαριον by *Minimus æris nummus*. We find mention of the aſſarion in the goſpel of St Matthew, chap. x. ver. 29.

ASSARON, or OMER, a meaſure of capacity, in uſe among the Hebrews, containing five pints. It was the meaſure of manna which God appointed for every Iſraelite.

ASSASIN, or ASSASSIN, a perſon who kills another

Aſſaſſins. ther with the advantage either of an inequality in the weapons, or by means of the ſituation of the place, or by attacking him at unawares.

The word *aſſaſſin* is ſaid by ſome to have been brought from the Levant, where it took its riſe from a certain prince of the family of the *Arſacidæ*, popularly called *Aſſaſſins*, living in a caſtle between Antioch and Damaſcus, and bringing up a number of young men, ready to pay a blind obedience to his commands; whom he employed in murdering the princes with whom he was at enmity. But according to Mr Volney, the word *Haſſaſſin* (from the root *haſa*, "to kill, to aſſaſſinate, to liſten, to ſurpriſe,") in the vulgar Arabic ſignifies "Robbers of the night," perſons who *lie in ambuſh to kill*; and is very univerſally underſtood in this ſenſe at Cairo and in Syria. Hence it was applied to the *Batenians*, who flew by ſurpriſe. See the next article.

There was a certain law of nations, an opinion, received in all the republics of Greece and Italy, whereby he that aſſaſſinated an uſurper of the ſupreme power was declared a virtuous man. At Rome eſpecially, after the expulſion of the kings, the law was formal and ſolemn, and inſtances of it admitted. The commonwealth armed the hand of any citizen, and created him a magiſtrate for that moment.

Assasins, a tribe or clan in Syria, called alſo *Iſmaelians* and *Bataniſts* or *Batenians*. Theſe people probably owed their origin to the Karmatians, a famous heretical ſect among the Mahometans, who ſettled in Perſia about the year 1090; whence, in proceſs of time, they ſent a colony into Syria, where they became poſſeſſed of a conſiderable tract of land among the mountains of Lebanon, extending itſelf from the neighbourhood of Antioch to Damaſcus.

The firſt chief and legiſlator of this remarkable tribe appears to have been Haſſan Sabah, a ſubtile impoſtor, who by his artifices made fanatical and implicit ſlaves of his ſubjects. Their religion was compounded of that of the Magi, the Jews, the Chriſtians, and the Mahometans; but the capital article of their creed was to believe that the Holy Ghoſt reſided in their chief; that his orders proceeded from God himſelf, and were real declarations of his divine pleaſure. To this monarch the orientals gave the name of *Scheik*; but he is better known in Europe by the name of the *Old Man of the Mountain*. His dignity, inſtead of being hereditary, was conferred by election; where merit, that is, a ſuperior multiplicity and enormity of crimes, was the moſt effectual recommendation to a majority of ſuffrages.

This chief, from his exalted reſidence on the ſummit of Mount Lebanon, like a vindictive deity, with the thunderbolt in his hand, ſent inevitable death to all quarters of the world; ſo that from one end of the earth to the other, caliphs, emperors, ſultans, kings, princes, Chriſtians, Mahometans, and Jews, every nation and people, execrated and dreaded his ſanguinary power, from the ſtrokes of which there was no ſecurity. At the leaſt ſuggeſtion or whiſper that he had threatened the death of any potentate, all immediately doubled their guards, and took every other precaution in their power. It is known that Philip Auguſtus king of France, on a premature advice that the Scheik intended to have him aſſaſſinated, inſtituted a new body-guard of men diſtinguiſhed for their activity and courage, called *ſergens d'armes*, with leaden clubs, bows and arrows: and he himſelf never appeared without a club, fortified either with iron or gold. Many even paid ſecretly a penſion to the Scheik, however [illegible] dalous and derogatory it might be to the luſtre of majeſty, for the ſafety of their perſons. The Knights Templars alone dared to defy his ſecret machinations and open force. Indeed they were a permanent diſciplined body, not to be cut off by aſſaſſins or aſſaſſinations.

This barbarous prince was furniſhed with reſources unknown to all other monarchs, even to the moſt abſolute deſpotic tyrant. His ſubjects would proſtrate themſelves at the foot of his throne, requeſting to die by his hand or order, as a favour by which they were ſure of paſſing into paradiſe. On them if danger made any impreſſion, it was an emulation to puſh forward; and if taken in any enterpriſe, they went to the place of execution with a magnanimity unknown to others. Henry count of Champagne, who married Iſabella daughter of Amaury king of Jeruſalem, paſſing over part of the territory of the Aſſaſſins in his way to Syria, and talking highly of his power, their chief came to meet him. "Are your ſubjects (ſaid the old man of the mountain) as ready in their ſubmiſſion as mine?" and without ſtaying for an anſwer, made a ſign with his hand, when ten young men in white, who were ſtanding on an adjacent tower, inſtantly threw themſelves down. On another occaſion, Sultan Malek-Shah ſummoning the Scheik to ſubmit himſelf to his government, and threatening him with the power of his arms, ſhould he heſitate to comply; the latter, very compoſedly turning himſelf towards his guards, ſaid to one of them, "Draw your dagger, and plunge it into your breaſt;" and to another, "Throw yourſelf headlong from yonder rock." His orders were no ſooner uttered than they were joyfully obeyed: and all the anſwer he deigned to give the ſultan's envoy was, "Away to thy maſter, and let him know I have many thouſand ſubjects of the ſame diſpoſition." Men ſo ready to deſtroy themſelves were equally alert and reſolute in being the miniſters of death to others. At the command of their ſovereign, they made no difficulty of ſtabbing any prince, even on his throne; and being well verſed in the different dialects, they conformed to the dreſs and even the external religion of the country, that they might with leſs difficulty ſtrike the fatal blow required by their chief. With the Saracens they were Mahometans; with the Franks, Chriſtians: in one place they joined with the Memelukes; in another, with the eccleſiaſtics or religious; and under this diſguiſe ſeized the firſt opportunity of executing their ſanguinary commiſſion. Of this we meet with an inſtance, in the hiſtory of Saladin, while he was beſieging Manbedge, the celebrated Hieropolis of antiquity. Being one day, with a few attendants, and they at ſome diſtance, reconnoitring the place for the better diſpoſition of the attack, a man ruſhed on him with a dagger in his hand, and wounded him on the head; but the ſultan, as he was endeavouring to repeat his ſtroke, wreſted the dagger from him, and, after receiving ſeveral wounds, laid him dead at his feet. Before the ſultan had well recovered himſelf, a ſecond encountered him to finiſh the treachery of the former;

Aſſaſſins Aſſay.

but he met with the ſame fate: he was ſucceeded with equal fury by a third, who alſo fell by the hand of that magnanimous prince whom he was ſent to aſſaſſinate. And it was obſerved that theſe wretches dealt about their fruitleſs blows as they lay in the agonies of death. With ſuch rapidity was this tranſacted, that it was over before Saladin's guards could come to his aſſiſtance. He retired to his tent, and in great perturbation throwing himſelf on his ſopha, ordered his ſervants to take a ſtrict view of his houſehold, and to cashier all ſuſpected perſons; at the ſame time aſking with great earneſtneſs, "Of whom have I deſerved ſuch treacherous uſage?" But it afterwards appeared, that theſe villains had been ſent by the old man of the mountain; of whom the vizir Kamſcheglin had purchaſed the murder of Saladin, to free himſelf from ſo great a warrior, whom he could not meet in the field. To animate them in their frantic obedience, the ſcheik, before their departure on ſuch attempts, uſed to give them a ſmall foretaſte of ſome of the delights which he aſſured them would be their recompenſe in paradiſe. Delicious ſoporific drinks were given them; and while they lay aſleep, they were carried into beautiful gardens, where every allurement invited their ſenſes to the moſt exquiſite gratifications. From theſe ſeats of voluptuouſneſs, inflamed with liquor and enthuſiaſtic views of perpetual enjoyments, they ſallied forth to perform aſſaſſinations of the blackeſt dye.

This people once had, or at leaſt they feigned to have, an intention of embracing the Chriſtian religion. They reigned a long time in Perſia and on Mount Lebanon. Hulaku, a khan of the Mogul Tartars, in the year 655 of the Hegira, or 1254 of the Chriſtian era, entered their country and diſpoſſeſſed them of ſeveral places; but it was not till the year 1272 that they were totally conquered. This achievement was owing to the conduct and intrepidity of the Egyptian forces ſent againſt them by the ſultan Bibaris. It has, however, been thought, that the Druſes, who ſtill reſide among the eminences of Mount Lebanon, and whoſe religion and cuſtoms are ſo little known, are a remnant of thoſe barbarians.

ASSAULT, in *Law*, is an attempt to offer to beat another, without touching him: as if one lifts up his cane or his fiſt in a threatening manner at another; or ſtrikes at him, but miſſes him: this is an aſſault, *inſultus*, which Finch deſcribes to be "an unlawful ſetting upon one's perſon." This alſo is an inchoate violence, amounting conſiderably higher than bare threats; and therefore, though no actual ſuffering is proved, yet the party injured may have redreſs by action of *treſpaſs vi et armis*, wherein he ſhall recover damages as a compenſation for the injury.

ASSAULT, in the military art, a furious effort made to carry a fortified poſt, camp, or fortreſs, wherein the aſſailants do not ſcreen themſelves by any works: while the aſſault continues, the batteries ceaſe, for fear of killing their own men. The *enfans perdus* march firſt to the aſſault. See *Enfans Perdus*.

ASSAY, Essay, or Say, in *Metallurgy*, the proof or trial of the goodneſs, purity, value, &c. of metals and metalline ſubſtances. See Essay.

In ancient ſtatutes this is called *touch*; and thoſe who had the care of it, *keepers of the touch*.—Under Henry VI. divers cities were appointed to have touch for wrought ſilver-plate, 2 Hen. VI. c. 14.—By this, one might imagine they had no better method of aſſaying than the ſimple one by the touch-ſtone; but the caſe is far otherwiſe. In the time of King Henry II. the biſhop of Saliſbury, then treaſurer, conſidering that though the money paid into the king's exchequer for his crown-rents did not anſwer *numero et pondere*, it might nevertheleſs be mixed with copper or braſs: wherefore a conſtitution was made, called the *trial by combuſtion*; which differs little or nothing from the preſent method of aſſaying ſilver. See a deſcription of it in the Black Book in the Exchequer, written by Gervaſe of Tilbury, c. xxi. This trial is alſo there called *eſſaium*, and the officer who made it is named *fuſor*. The method ſtill in uſe of aſſaying gold and ſilver was firſt eſtabliſhed by an act of the Engliſh parliament 1354.

Aſſaying Aſſay-maſter.

ASSAYING, *ars docimaſtica*, in its extent, comprehends particular manners of examining every ore, or mixed metal, according to its nature, with the beſt-adapted fluxes; ſo as to diſcover, not only what metals, and what proportions of metal, are contained in ores; but likewiſe how much ſulphur, vitriol, alum, arſenic, ſmelt, &c. may be obtained from every one reſpectively. See Mineralogy *Index*.

Aſſaying is more particularly uſed by moneyers and goldſmiths, for the making a proof or trial by the cuppel, or teſt, of the fineneſs or purity of the gold and ſilver to be uſed in the coining of money, and manufacture of plate, &c. or that have been already uſed therein.

There are two kinds of aſſaying; the one before metals are melted, in order to bring them to their proper fineneſs; the other after they are ſtruck, to ſee that the ſpecies be ſtandard. For the firſt aſſay, the aſſayers uſe to take 14 or 15 grains of gold, and half a drachm of ſilver, if it be for money; and 18 grains of the one, and a drachm of the other, if for other occaſions. As to the ſecond aſſay, it is made of one of the pieces of money already coined, which they cut in four parts. The quantity of gold for an aſſay among us is ſix grains; in France nearly the ſame; and in Germany, about three times as much.

The proper ſpelling of that word, however, is Essay; under which article, therefore, the reader will find the ſubject more particularly treated.

Assay-Balance, or *Eſſay-Balance*. The flat pieces of glaſs often placed under the ſcales of an aſſay-balance, ſeem, by their power of electricity, capable of attracting, and thereby making the lighter ſcale preponderate, where the whole matter weighed is ſo very ſmall. See *Eſſay-Balance*.

The electricity of a flat ſurface of about three inches ſquare has been known to hold down one ſcale, when there were about 200 grains weight in the other. See Balance.

Assay-Maſter, or *Eſſay-Maſter*, an officer under certain corporations, intruſted with the care of making true touch, or aſſay, of the gold and ſilver brought to him; and giving a juſt report of the goodneſs or badneſs thereof. Such is the aſſay-maſter of the mint in the Tower, called alſo *aſſayer of the king*.

The aſſay-maſter of the goldſmith's company is a ſort of aſſiſtant-warden, called alſo a *touch-warden*, appointed to ſurvey, aſſay, and mark all the ſilver work, &c. committed

Aſſelyn Aſſembly.

committed to him. There are alſo aſſay-maſters appointed by ſtatute at York, Exeter, Briſtol, Cheſter, Norwich, Newcaſtle, and Birmingham, for aſſaying wrought plate. The aſſay-maſter is to retain eight grains of every pound troy or ſilver brought to him; four whereof are to be put in the pix, or box of deal, to be re-aſſayed the next year, and the other four to be allowed him for his waſte and ſpillings.

Note, The number of pennyweights ſet down in the aſſay-maſter's report, is to be accounted as per pound, or ſo much in every pound of 12 ounces troy. For every 20 pennyweight, or ounce troy, the ſilver is found by the aſſay to be worſe than ſtandard, or ſterling, ſixpence is to be deducted; becauſe every ounce will coſt ſo much to reduce it to ſtandard goodneſs, or to change it for ſterling.

In gold, for every carat it is ſet down to be worſe than ſtandard, you muſt account that in the ounce troy it is worſe by ſo many times 3s. 8d.; and for every grain it is ſet down worſe, you muſt account it worſe by ſo many times 11d. in the ounce troy; and for every half grain 5½d.: for ſo much it will coſt to make it of ſtandard goodneſs, &c.

ASSELYN, John, a famous Dutch painter, was born in Holland, and became the diſciple of Iſaiah Vandervelde the battle-painter. He diſtinguiſhed himſelf in hiſtory-painting, battles, landſcapes, animals, and particularly horſes. He travelled into France and Italy; and was ſo pleaſed with the manner of Bamboccio, that he always followed it. He painted many pictures at Lyons, where he married the daughter of a merchant of Antwerp, and returned with her to Holland. Here he firſt diſcovered to his countrymen a freſh and clear manner of painting landſcapes, like Claude Lorraine; upon which all the painters imitated his ſtyle, and reformed the dark brown they had hitherto followed. Aſſelyn's pictures were ſo much admired at Amſterdam, that they ſold there at a high price. He died in that city in 1660. Twenty-four pieces of landſcapes and ruins, which he painted in Italy, have been engraved by Perelle.

ASSEMBLAGE, the uniting or joining of things together; or the things themſelves ſo united or joined. It is alſo uſed, in a more general ſenſe, for a collection of various things ſo diſpoſed and diverſified, that the whole produces ſome agreeable effect.

ASSEMBLY, the meeting of ſeveral perſons, in the ſame place, upon the ſame deſign.

Assembly, in the beau-monde, an appointed meeting of faſhionable perſons of both ſexes, for the ſake of play, dancing, gallantry, converſation, &c.

Assembly, in the military art, the ſecond beating of a drum before a march; at which the ſoldiers ſtrike their tents, roll them up, and ſtand to arms.

Assemblies of the clergy are called *convocations*, *ſynods*, *councils*. The annual meeting of the church of Scotland is called a *General Aſſembly*: In this aſſembly his Majeſty is repreſented by his Commiſſioner, who diſſolves one meeting, and calls another, in the name of the *King*, while the Moderator does the ſame in the name of the *Lord Jeſus Chriſt*.

Assemblies of the Roman people were called *comitia*.

Under the Gothic governments, the ſupreme legiſlative power was lodged in an aſſembly of the ſtates of the kingdom held annually for the [illegible] parliament. The meaning of this [illegible] is the annual aſſembling of the peers of [illegible] of France previous to the late revolution; but were no more than ſhadows of the ancient aſſemblies. It is only in Great Britain, and perhaps in Sweden, that ſuch aſſemblies retain their ancient power and privileges.

ASSENS, a ſea-port town of Denmark, ſituated upon the Little Belt, a ſtrait of the Baltic, which ſeparates the iſle of Funen from the continent. It is the common paſſage from the duchy of Sleſwick to Copenhagen. E. Long. 10. 30. N. Lat. 55. 15.

ASSENT, in a general ſenſe, implies an agreement to ſomething propoſed or affirmed by another.

Royal Assent, the approbation given by the king to a bill in parliament, after which it becomes a law.

ASSER, John, or Asserius Menevensis, that is, *Aſſer of St David's*, biſhop of Shirburn in the reign of Alfred the Great. He was born in Pembrokeſhire in South Wales; and educated in the monaſtery of St David's by the archbiſhop Aſſerius, who, according to Leland, was his kinſman. In this monaſtery he became a monk, and by his aſſiduous application ſoon acquired univerſal fame as a perſon of profound learning and great abilities. Alfred, the munificent patron of genius, about the year 880, ſent for him to court. The king was then at Dean in Wiltſhire. He was ſo charmed with Aſſer, that he made him his preceptor and companion. As a reward for his ſervices, he appointed him abbot of two or three different monaſteries: and at laſt promoted him to the epiſcopal ſee of Shirburn, where he died and was buried in the year 910. He was, ſays Pits, a man of happy genius, wonderful modeſty, extenſive learning, and great integrity of life. He is ſaid to have been principally inſtrumental in perſuading the king to reſtore the univerſity of Oxford to its priſtine dignity and luſtre. He wrote, *De vita et rebus geſtis Alfredi*, &c. Lon. 1574, publiſhed by Archbiſhop Parker, in the old Saxon character, at the end of *Walſinghami hiſt.*——Francf. 1602, fol. Oxf. 1722, 8vo. Many other works are aſcribed to this author by Gale, Bale, and Pits; but all doubtful.

ASSERIA. See Asisia.

ASSERTION, in the language of the ſchools, a propoſition advanced by the aſſertor, who avows the truth of it, and is ready to defend it.

ASSESSOR, an inferior officer of juſtice appointed chiefly to aſſiſt the ordinary judge with his opinion and advice.

Assessor is alſo one who aſſeſſes, or ſettles taxes and other public dues.

ASSETS, in *Law*, ſignifies goods enough to diſcharge that burden which is caſt upon the executor or heir, in ſatisfying the debts and legacies of the teſtator or anceſtor. Aſſets are real or perſonal. Where a man hath lands in fee ſimple, and dies ſeiſed thereof, the lands which come to his heir are aſſets real; and where he dies poſſeſſed of any perſonal eſtate, the goods which come to the executors are aſſets perſonal. Aſſets are alſo divided into *aſſets by deſcent*, and *aſſets in hand*. Aſſets by deſcent is where a perſon is bound in an obligation, and dies ſeiſed of lands which deſcend to the heir, the land ſhall be aſſets, and the

Aſſeveration. Aſſicato.

heir ſhall be charged as far as the lands to him deſcended will extend. *Aſſets in hand* is when a man indebted makes executors, and leaves them ſufficient to pay his debts and legacies; or where ſome commodity or profit ariſeth to them in right of the teſtator: this is called *aſſets in their hands.*

ASSEVERATION, a poſitive and vehement affirmation of ſomething.

ASSHETON, WILLIAM, doctor of divinity, and rector of Beckenham, in Kent, was born in the year 1641, and was educated at Brazen-noſe college, Oxford. After entering into orders, he became chaplain to the duke of Ormond, and was admitted doctor of divinity in 1673. Soon after, he was nominated to a prebend in the church of York, preſented to the living of St Antholin, London, and to the rectory of Beckenham in Kent. He was the firſt projector of the ſcheme for providing for clergymen's widows, and others, by a jointure payable out of the mercers company. He wrote ſeveral pieces againſt the Papiſts and Diſſenters, and ſome devotional tracts. He died at Beckenham in September 1711, in the 70th year of his age.

ASSIDEANS, or CHASIDÆANS, (from the Hebrew *chaſidim*, "merciful, pious") ; thoſe Jews who reſorted to Mattathias to fight for the law of God and the liberties of their country. They were men of great valour and zeal, having voluntarily devoted themſelves to a more ſtrict obſervation of the law than other men. For after the return of the Jews from the Babyloniſh captivity, there were two ſorts of men in their church; thoſe who contented themſelves with that obedience only which was preſcribed by the law of Moſes, and who were called *Zadikim*, i. e. the *righteous*; and thoſe who, over and above the law, ſuperadded the conſtitutions and traditions of the elders, and other rigorous obſervances: theſe latter were called *Chaſidim*, i. e. the *pious*. From the former ſprung the Samaritans, Sadducees, and Caraites; from the latter, the Phariſees and the Eſſenes.

ASSIDENT SIGNS, in *Medicine*, are ſymptoms which uſually attend a diſeaſe, but not always; hence differing from *pathognomic* ſigns, which are inſeparable from the diſeaſe: *e. gr.* In the pleuriſy, a pungent pain in the ſide, in an acute fever, diſficulty of breathing, &c. collectively taken, are pathognomic ſigns; but that the pain extends to the hypochondrium or clavicle, or that the patient lies with more eaſe on one ſide than on the other, are *aſſident* ſigns.

ASSIDUUS, or ADSIDUUS, among the Romans, denoted a rich or wealthy perſon. The word in this ſenſe is derived from *as aſſis*, q. d. a monied man. Hence we meet with *aſſiduus* ſureties, *aſſidui ſolvendo eſſe*, anſwering to what the French now call city ſureties or ſecurities, *cautions bourgeois*.

When Servius Tullius divided the Roman people into five claſſes, according as they were aſſeſſed or taxed to the public, the richer ſort who contributed aſſes were denominated *aſſidui*; and as theſe were the chief people of buſineſs who attended all the public concerns, thoſe who were diligent in attendances came to be denominated *aſſidui*.

ASSIENTO, a Spaniſh word ſignifying a *farm*, in commerce uſed for a bargain between the king of Spain and other powers, for importing negroes into the Spaniſh dominions in America, and particularly to Buenos Ayres. The firſt aſſiento was made with the French Guinea company; and, by the treaty of Utrecht, transferred to the Engliſh, who were to furniſh 4800 negroes annually.

Aſſign Aſſiſe.

ASSIGN, in *Common Law*, a perſon to whom a thing is aſſigned or made over.

ASSIGNATION, an appointment to meet. The word is generally underſtood of love-meetings.

ASSIGNEE, in *Law*, a perſon appointed by another to do an act, tranſact ſome buſineſs, or enjoy a particular commodity.

ASSIGNING in a general ſenſe, implies the making over the right of one perſon to another. In a particular ſenſe, it ſignifies the pointing out of ſomething; as, an error, falſe judgment, &c.

ASSIGNMENT, the transferring the intereſt one has in a leaſe, or other thing, to another perſon.

ASSIMILATION, in *Phyſics*, is that motion by which bodies convert other bodies related to them, or at leaſt ſuch as are prepared to be converted, into their own ſubſtance and nature. Thus, flame multiplies itſelf upon oily bodies, and generates new flame; air upon water, and produces new air; and all the parts, as well ſimilar as organical, in vegetables and animals, firſt attract with ſome election or choice, nearly the ſame common or not very different juices for aliment, and afterwards aſſimilate or convert them to their own nature.

ASSISE, in old Engliſh law-books, is defined to be an aſſembly of knights, and other ſubſtantial men, together with a juſtice, in a certain place, and at a certain time: but the word, in its preſent acceptation, implies a court, place, or time, when and where the writs and proceſſes, whether civil or criminal, are decided by judge and jury.

All the counties of England are divided into ſix circuits; and two judges are aſſigned by the king's commiſſion, who hold their aſſiſes twice a-year in every county (except London and Middleſex), where courts of *niſi prius* are holden in and after every term, before the chief or other judge of the ſeveral ſuperior courts; and except the four northern counties, where the aſſiſes are taken only once a-year) to try by a jury of the reſpective counties the truth of ſuch matters of fact as are then under diſpute in the courts of Weſtminſter hall. Theſe judges of aſſiſe came into uſe in the room of the ancient juſtices in eyre, *juſticiarii in itinere*; who were regularly eſtabliſhed, if not firſt appointed, by the parliament of Northampton, A. D. 1176, 22 Hen. II. with a delegated power from the king's great court or *aula regia*, being looked upon as members thereof: and they afterwards made their circuit round the kingdom once in ſeven years for the purpoſe of trying cauſes. They were afterwards directed by *magna charta*, c. 12. to be ſent into every country once a-year to take or try certain actions then called *recognitions* or *aſſiſes*; the moſt difficult of which they are directed to adjourn into the court of common pleas to be there determined. The itinerant juſtices were ſometimes mere juſtices of aſſiſe, or of dower, or of gaol-delivery, and the like; and they had ſometimes a more general commiſſion, to determine all manner of cauſes, *juſticiarii ad omnia placita*: but the preſent juſtices of aſſiſe and *niſi prius* are more immediately derived

Aſſiſe. derived from the ſtatute Weſtm. 2. 13 Edw. I. c. 30. explained by ſeveral other acts, particularly the ſtatute 14 Edw. III. c. 16. and muſt be two of the king's juſtices of the one bench or the other, or the chief baron of the exchequer, or the king's ſerjeants ſworn. They uſually make their circuits in the reſpective vacations after Hilary and Trinity terms; aſſiſes being allowed to be taken in the holy time of Lent by conſent of the biſhops at the king's requeſt, as expreſſed in ſtatute Weſtm. 1. 3 Edw. I. c. 51. And it was alſo uſual, during the times of Popery, for the prelates to grant annual licenſes to the juſtices of aſſiſe to adminiſter oaths in holy times: for oaths being of a ſacred nature, the logic of thoſe deluded ages concluded that they muſt be of eccleſiaſtical cognizance. The prudent jealouſy of our anceſtors ordained that no man of law ſhould be judge of aſſiſe in his own county: and a ſimilar prohibition is found in the civil law, which has carried this principle to far, that it is equivalent to the crime of ſacrilege, for a man to be governor of the province in which he was born, or has any civil connexion.

The judges upon their circuits now ſit by virtue of five ſeveral authorities. 1. The commiſſion of the *peace* in every county of the circuit: and all juſtices of the peace of the county are bound to be preſent at the aſſiſes; and ſheriffs are alſo to give their attendance on the judges, or they ſhall be fined. 2. A commiſſion of *oyer* and *terminer*, directed to them and many other gentlemen of the county, by which they are empowered to try treaſons, felonies, &c. and this is the largeſt commiſſion they have. 3. A commiſſion of general *gaol-delivery*, directed to the judges and the clerk of aſſiſe aſſociate, which gives them power to try every priſoner in the gaol committed for any offence whatſoever, but none but priſoners in the gaol; ſo that one way or other they rid the gaol of all the priſoners in it. 4. A commiſſion of *aſſiſe*, directed to the judges and clerk of aſſiſe, to take aſſiſes; that is, to take the verdict of a peculiar ſpecies of jury called an *aſſiſe*, and ſummoned for the trial of *landed* diſputes. The other authority is, 5. That of *niſi prius*, which is a conſequence of the commiſſion of *oyer* and *terminer* annexed to the office of thoſe judges by the ſtatute of Weſtm. 2. 13. Edw. I. c. 30. And it empowers them to try all queſtions of fact ſtarting out of the courts of Weſtminſter, that are then ripe for trial by jury. The original of the name is this; all cauſes commenced in the courts of Weſtminſter-hall are by the courts of the ſeveral counties appointed to be there tried, on a day fixed in term time Eaſter or Michaelmas term, by a jury returned from the county wherein the cauſe of action ariſes; but with this proviſo, *niſi prius juſticiarii ad aſſiſas capiendas venerint*, unleſs before the day prefixed the judges of aſſiſe come into the county in queſtion. This they are ſure to do in the vacations preceding each Eaſter and Michaelmas term, and there diſpoſe of the cauſe; which ſaves much expence and trouble, both to the parties, the jury, and the witneſſes.

The word *aſſiſe* (from the French *aſſis*, ſeated, ſettled, or eſtabliſhed, and formed of the Latin verb *aſſideo*, "I ſit by") is uſed in ſeveral different ſenſes. It is ſometimes taken for the ſitting of a court; ſometimes for its regulations or ordinances, eſpecially thoſe that fix the ſtandard of weights and meaſures; and ſometimes its ſignifies a jury, either becauſe juries conſiſted of a fixed determinate number, or becauſe they continued ſitting till they pronounced their verdict. In Scots law, and aſſiſe or jury conſiſts of 15 ſworn men (*juratores*), picked out by the court from a greater number, not exceeding 45, who have been ſummoned for that purpoſe by the ſheriff, and given in liſt to the defender, at ſerving him with a copy of his libel.

ASSISIO, an epiſcopal town of Italy, in the duchy of Spoleto, built on the ſide of a very high mountain. The cathedral of St Francis is very magnificent, and compoſed of three churches, one above another. E. Long. 13. 35. N. Lat. 43. 4.

ASSITHMENT, a wiregeld, or compenſation, by a pecuniary mulct; from the prepoſition *ad*, and the Sax. *ſithe, vice; quod vice ſuppleri ad expiandum delictum ſolvitur.*

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